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U. S. Charting Vast Emergency Program To Double Plane Production Schedule



The Tom Toms Beat

SOMETIMES in December the drums will be beating again in a committee room in Congress for another long series of hearings designed to prove that the defense industries of the U. S. are making huge profits at the expense of the taxpayer. Rep. Carl Vinson of Georgia will open his carefully-planned show in an effort to force action on his 7% profit limitation bill which would blanket all defense work in the nation down to the last subcontractor of a subcontract.

To the average taxpayer there possibly could be nothing more reasonable than a limitation of profits during this heyday of frenzied expenditure for all manner of defense articles from battleships to airplanes and tanks. But back of the flamboyant newspaper headlines are hidden the ramifications of Mr. Vinson's proposal, a concept astonishing in its injustice and misconceptions.

It is difficult enough to have Congressional hearings disrupting the work of companies and their harassed executives at a time when all-out production effort is needed, but it is

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And Regular Features

Administration Pushes 'Victory Campaign' to Step Up Military Aircraft Output Starting With Heavy Bombers

By CELESTE W. PAGE

IN HIGH Administration circles, officials are in dead earnest about the "Victory Campaign" to double aircraft and all defense production, although the public and industry generally do not yet realize the full significance of this gigantic program.

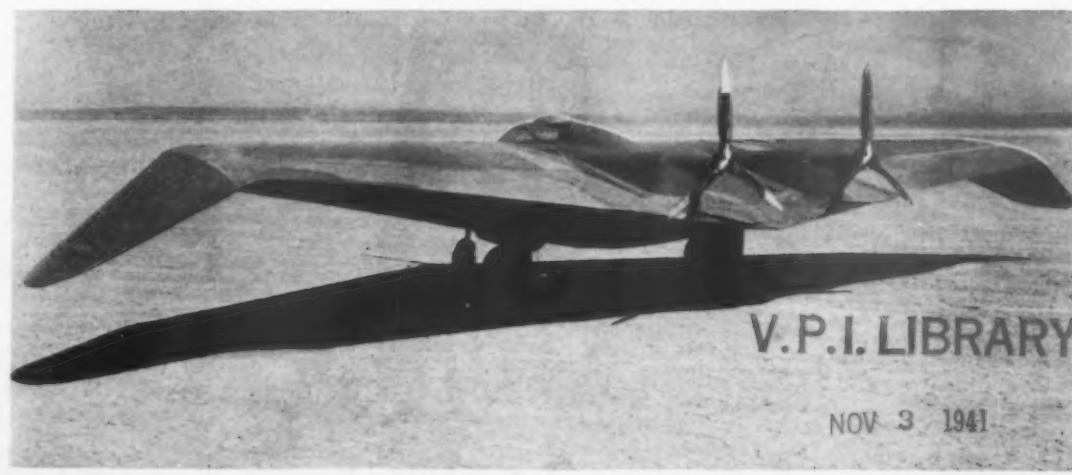
Skeptics who cannot visualize how this double output could be achieved are as aghast at the idea as they were two years ago when the President called for 50,000 planes—then considered a fantastic dream—and are lulling themselves with the erroneous but comforting thought that the press reports from Washington are only a trial balloon.

The Victory Campaign is not a trial balloon.

The Administration had planned to announce the new production program through issuance of an explanatory statement by the Office of Production Management, but when the story broke prematurely in a few newspapers on the week-end of Oct. 18 the War Department became concerned and temporarily halted plans for an official declaration on the overall plan. It now appears that official verification of what the heads of our government have

(Turn to page 12)

'First Successful Flying Wing'



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REPUBLIC AVIATION

Flying Wing—Key to New Aviation Era?

Northrop Says Radical New Design May Treble Usefulness and Economic Value of Planes; Military, Transport Versions Expected

The drawing boards of Northrop Aircraft Inc. may be remembered as the birthplace of an airplane which ushered in a new era for military, commercial and civil aviation.

That airplane—the Flying Wing—has just been shorn of some of its mystery by Army-authorized statements unparalleled in their reference to the future significance of a single type of aircraft.

Later this month newspapermen will be taken to testing grounds in the Mojave desert for the first public showing of the Wing, which has been test flown more than 200 times in the last year.

The newsmen will see a plane about which the traditionally conservative War Dept. officially supports the manufacturer in such statements as:

The craft represents the first successful true flying wing.

It embodies the principle which is generally recognized as being the ultimate possible refinement based on the present concept of heavier-than-air craft.

It holds considerable promise of radically changing aircraft design within the next few years.

The structural simplicity and added space for cargo, passengers and various necessary components would more than justify the adaptation of the design to modern transport aircraft.

The usefulness and economic value of aircraft might be doubled or trebled by such an improvement.

What the War Dept. has not permitted, in the company announcement, is verification of the fact that John K. Northrop's tailless craft may well be the answer to the speedy, long-range fighting ship which military men look to as the key to mastery of the air.

Nor is it generally known that the Northrop company has developed another "mystery plane"—a new twin-engined interceptor reportedly spectacular in its speed, power, armament and flying characteristics—which may be in production even before the Wing.

These are the "highly special-

ized type of aircraft" for which Northrop admits it received during the last fiscal year a \$26,000,000 developmental order from the Air Corps.

Many of the advantages claimed for the Wing over conventional type aircraft embody characteristics which military experts generally concede to be necessary for the long range fighter of the future. Unofficial reports and the Army's obvious interest in the project indicate that the Wing is being groomed as a fighter plane—probably the most

rop design staff, the project was discussed with Dr. Theodore von Karman, internationally famous aerodynamicist, and Dr. William R. Sears, who recently became Chief Aerodynamicist for Northrop. The Air Corps early took an active interest, and collaborated in wind tunnel and flight model tests.

The first model, according to the company, was first test flown by Vance Breese, noted test pilot, in the summer of 1940. "This first experimental model was designed as a one-half to one-third scale model of a twin-engine transport or cargo airplane." The model "has a span of approximately 38 feet," the company adds. It is understood to have been equipped with two

Control Surfaces Not Shown

Military secrecy has prevented the showing of control surfaces in the picture of the Flying Wing appearing on the front page of this issue. Radically designed control surfaces are located on both the main wing and extended wing tips. The long rod extended from the plane's nose in the picture on this page is an air-speed indicator.

airfoil, except for the small propeller drive shaft housings which extend above and to the rear of the wing.

"The Flying Mockup employs two



revolutionary yet developed.

The company report, although stressing the Wing's transport potentialities, admits that the defense effort "makes it impossible to apply the Northrop Wing to commercial transport in the immediate future."

But the announcement claims: "The Northrop Wing, if applied to a passenger transport of conventional size, such as is now used by the majority of airlines, would have a thickness of from seven to eight feet, which is ample for the comfortable housing of passengers, crew and cargo."

Thus, while it is most likely that this huge cargo space created within a wing will first be utilized as a carrier of cannon, ammunition and bombs, it is designed as well for transport usage in the future.

For almost 20 years John Northrop planned and worked on a plane which would have all its functions combined in one large airfoil, an objective which others have long pursued. Back in 1929 he supervised the design and construction of what the company described as "a so-called flying wing," but the tail surfaces were carried on two outriggers, and engineering on a completely tailless craft was not begun until 10 years later. In addition to participation by the North-

aircooled 90hp engines and, during early tests, to have outflown an advanced trainer ship having a 520hp engine.

While it is likely that Northrop has a full sized Wing either completed or near completion, all information available concerns the wooden model—or "Flying Mockup."

"Comparing airplanes of the same approximate size and carrying capacity," the company states, "The Northrop design has considerably less drag than a conventional airplane, which means that the same comparative speed can be obtained with less horsepower or that the speed may be considerably increased using the same horsepower.

"The savings in cost of construction of such an airplane as compared with conventional types is also extensive, as the Northrop aircraft consists essentially of a thick wing in which there are virtually no structural complications, and in which there is ample room for the installation of the many auxiliary component parts which make up the modern airplane.

"Power plant and personnel are housed within the contours of the airfoil and there are no portions of the airplane which do not contribute directly to the lift of the

engines buried in the wing on either side of the pilot's cockpit, driving pusher propellers through extension shafts approximately 10 feet long. In its present model form the plane is just as stable, controllable and maneuverable as any conventional airplane of similar size and weight."

Studies of the design sketches and pictures indicate that the Wing has radical steering principles. It is believed that the control surfaces on the novel wing tips work independently as rudders. Thus in turning the plane to the right, the right rudder would be depressed, "stalling" the wing tip as if some giant had grabbed it.

Details of performance, of course, are still a military secret, but the Army-authorized statement hints at the Wing's great speed (reportedly destined to be nearly 500mph) and the company announcement states: "It is Mr. Northrop's prediction, in view of the work accomplished to date, that transport aircraft having cruising speeds approximately 100mph greater than the best now obtainable can be built as soon as the necessary engineering can be completed and construction facilities made available."

Air Scoops

Civilian Air Defense . . . Export and TACA . . . Military Light Planes Women Ferry Pilots . . . CPTP Budget . . . Federal Air Control

Wrapped in Red Tape

A Civilian Air Defense program in some form is coming up, but howls over the delay in getting it started become louder and louder, have defense officials admitting it isn't healthy. The plan will probably be outlined in a civilian defense pamphlet. Official announcement is expected to come by radio. When? "Any day now" becomes a joke after two months, even in red-taped Washington.

Gill Robb Wilson, NAA leader who helped draw up original plans, is the best bet to direct the program, with Maj. Reed Landis, on leave from American Airlines, in a top spot. Some officials want Maj. Gen. James E. Fehet as titular head. He's former Assistant Chief of the Air Corps, retired since 1931, and has been offered for the post by the War Dept. A committee representing Army, Navy, CAA and the industry will help direct operations.

Light plane manufacturers are still wondering how they will fit into the project. A meeting held quietly with civilian air defense leaders during the Oct. 21 light plane conference in Washington didn't help much . . . the explanations given were somewhat vague. Biggest worry among the producers: air defense administrators lack funds to finance the program on a big scale. Despite OPM's recent civilian plane maintenance priority ruling, the program may have priority trouble.

How Many 'Cobras

Airacobra output—hush, hush on the exact figures—is reported in Washington to be "more than five, less than 10 each day," divided equally between Bell's two plants. The new Niagara Falls plant has an eventual capacity of 12 daily, but won't reach that number for some time, awaiting completion of a new addition. Newspapermen who attended the Niagara Falls dedication know the exact totals, but were warned about military secrets. The 1941 output is something near 450, greater share of these coming since July 1.

Bumpy Flying

Factory to seaboard ferrying by women pilots made smooth newspaper reading, ran into bumpy flying in the War Dept. The truth is that the Air Corps, temporarily at least has *given up the idea*, and officers aren't talking much on the subject. There are still many outsiders who think women pilots should be given a chance to show their ability in some

defense activity. They will—in the civilian defense project . . . Meanwhile, feminine participation in aircraft plants is becoming more and more a success. Labor Dept. records show that the Employment Service gets 50 demands for women to do detailed plant assembly for every woman registered for the work.

reports go. The Atlantic airlane is still an unknown, but Pan American isn't expected to have heavy competition in Central and South America "for the duration." Word having this general meaning has been passed down to all government agencies. It doesn't mean TACA won't be purchased; in fact, a deal is now simmering . . . but it doesn't involve Export.

Brass Hat Stalemate

Over at the War Dept., the official attitude on light planes is still a question mark. High Army officers in Infantry, Cavalry and Field Artillery want them, are applying pressure, but *have hit a snag* in selling the Air Corps. Old line Army jealousy and a separate air force are both involved. But also important is the problem of pay for military light plane pilots. Equal salary rates for combat and light ship flyers would be almost impossible to maintain. It demands an adjustment in pay schedules, but that adjustment hasn't come.

Military light plane orders will come—eventually—but the inner War Dept. maneuvers on the subject are puzzling to light plane manufacturers, for whom life is full of problems these days. Their major criticism: Air Corps doesn't appear willing to set up *specifications* for military light planes and ask producers to meet them. The procedure to date: overload the little ships with military equipment during Wright Field tests, thus crippling plane performance. Stock Air Corps answer: sorry, planes won't do the job. The producers feel specifications could be met, but not without expenditures, impractical unless more promise of future orders is given.

Thumbs Down

Worth waiting for from the Civil Aeronautics Board: granting of the first federal certificate for non-scheduled flight operations. Several operators are urging the Board to act immediately on their applications for *non-scheduled flying certificates* . . . examiner's recommendations in Eastern Air Lines' mail rate case, which may have questions of policy not even presented in the controversial American rate report . . . Board action on the examiner's recommendation that American Export application to purchase TACA, Central American airline, be denied.

About the Export case . . . insiders are betting CAB will uphold the recommendation. Time was when official Washington strongly encouraged Export to buy TACA, but not anymore, so the

Organization

Air Corps organization charts become obsolete even faster than combat planes. Any number have been drawn up, sent to Gen. Arnold's desk, sent back again for revision. Juggling is going on in an attempt to establish a permanent organizational setup. The Corps has had *growing pains* ever since the tremendous expansion began a year ago. Attempts to "freeze" the administrative machinery have been broken up time after time with increases in the flying program. In the Corps it has been a gradual change from an administrative to a command status. Several changes, even a separate meteorological unit, can be expected when the organization is all ironed out.

Budget Headache

Annual tussles with the Bureau of the Budget are in season, and no one is having more grief before that statistically-minded body than new CPTP Director Jack Morris. Both Army and Navy have reportedly *done some knifing*, but the Bureau has given Morris assurance that there will be a substantial CPTP program next year, and he hopes to overcome Army-Navy antagonism. And the howls from schools eliminated from this fall's program do not make the CPTP director's life any happier.

Contentment

Found: one phase of the extension of federal control over aviation which is not arousing local opposition. It has to do with CAA taking over operation of control towers. In fact, CAA reports requests pouring in from other points asking for the take-over of more towers now municipally operated. Cities are said to be *anxious to be relieved* both of the responsibility of directing air traffic at congested points and of tower operation costs. Federal officials see little chance of the municipalities wanting to recover control of tower duties after the emergency.



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Speaking Off the Record

'Profit Limit' Threatens Aircraft Industry

AIRCRAFT manufacturers are joined by other defense producers in their alarm and genuine concern over the growing pressure in Washington for legislation setting a ceiling on profits. Their anxiety springs from practical experience in operating a manufacturing business.

Here is the situation as it is developing behind the scenes in Washington:

Rep. Carl Vinson, who recently introduced a bill to put a limitation on profits, is planning to open spectacular public hearings on Dec. 1. His bill has been referred to the House Ways and Means Committee which is currently cold to the proposal.

But Mr. Vinson hopes to stir up enough popular demand for enactment by highlighting in his hearings the "unconsciousable" profits which he claims aircraft and other defense manufacturers are squeezing out of the taxpayers. He will base his position on certain isolated cases uncovered by the exhaustive investigation conducted during the summer by the large staff of the House Naval Affairs committee which he heads.

Experienced financial leaders on Capitol Hill today incline to agree with private business that the theory of a profit limitation is contrary to the American system of free enterprise. But the subject is a popular one and the kind that usually attracts votes in Congress.

The forces which are massing in

Col. Ennis Is Appointed Public Relations Head



Col. Ennis

Lt. Col. A. I. Ennis has been appointed Chief of a newly created public relations section of the Air Forces Staff. The new section is a separate unit which will direct public relations work

for all air activities in the War Dept. Formerly, the unit was a subsection of the Intelligence Division of the Air Corps. Col. Ennis has been the Air Corps representative in the War Dept.'s Public Relations Bureau. He served as Chief of the Air Corps public relations section several years ago. Maj. F. M. S. Miller, Chief of the now abandoned Public Relations Division of the Corps, has been assigned to Wright Field as Chief of the Technical Data Branch.

opposition—including both government, Congressional and industrial leaders of experience—have this to say against Rep. Vinson's proposal, or for that matter, any proposal for a legal limitation on profits:

1. Rep. Vinson would limit profits on individual contracts. But business operates on an overall net profit which balances off losses on some contracts against gains on others. If a profit limit is voted, then a limit on losses should also be set.

2. The Vinson method places a premium on inefficiency. For a manufacturer can usually estimate whether he is going to make an excess profit before he enters a contract and would thus be inclined to hike his cost estimates.

3. The government should be primarily interested in getting what it needs at the lowest cost to the government. Thus a system should be maintained that would give the maximum incentive to this end.

4. Congress has already gone on record as averse to the profit limitation theory. Last year, it adopted a wise policy of putting all business on the same basis by requiring that all excess profits be returned to the government in the form of taxes. This system is sound and serves to develop the strongest incentive for reduction of costs—while incidentally following the same pattern as our fundamental economic principle of free enterprise, the privilege we are striving to defend.

The danger of the Vinson hearings lies in the possibility that the Congressmen will publicize only one side of the picture—by disclosing big profits on single contracts but neglecting to reveal that other contracts in the same companies, under the same accounting system, would show substantial losses.

Fate of the proposal will depend in large measure on the attitude of the White House—to date undeclared—and the OPM, Army and Navy. Rumors are flying fast that these officials are secretly expressing one view or another—depending on which rumor you hear!

C. W. P.

New Chief of Gulf Center

First military pilot in the U.S., Maj. Frank P. Lahm, has been appointed commander of the Gulf Coast Air Corps Training Center with headquarters at Randolph Field, Tex. He succeeds Maj. Gen. Gerald C. Brank, now head of the Army's Newfoundland Base Command.

Action on Capitol Hill

CONGRESS HAS ACTED in the past two weeks on a number of aviation bills including . . . final passage of the measure liberalizing the amortization section of the Internal Revenue Code . . . committee approval of a new expansion of Naval aviation shore facilities and training amounting to almost one hundred million . . . fast movement toward repeal of the Neutrality Act, first through sanction for arming merchant vessels . . . authorization of another billion and a half in lending power by the RFC to enlarge steel production and further broaden aircraft and other defense manufacturing facilities . . . House approval of the revised federal-aid highway measure, retaining \$10,000,000 for roadside flight strip construction . . . Senate approval of three new members for the Truman committee investigating national defense . . . inspection of Naval air bases in the southeast and Caribbean area by an aviation subcommittee.

Army-Navy Briefs

CORPUS CHRISTI, newest link in the Navy's chain of major air stations, this week will graduate its first class of aviation cadets nine months ahead of official expectations when construction was started on the Texas field. The center is designed with capacity for 2,200 cadets, under a staff of 800 officers and using 1,200 planes.

TO PREVENT stray livestock from tangling with Army planes at Geiger Field, Spokane, Wash., WPA workers are fencing the entire bomber base. In addition to reducing the hazards of night landing and take-offs, the fence will stop unwanted visitors.

DETAILED report on casualties among Army parachute troopers indicates that only 2.4% of all jumps result in injuries. Based on official records of all mishaps since organization of the 501st and 502d Parachute Battalions, the study shows that in the year ended Aug. 1, 1941, there were 4,490 leaps, with 121 injuries—only 32 requiring hospitalization. During the period one man was killed when his 'chute failed to open, but, it is pointed out, the fatality occurred in a jump from 750 feet and jumping at this height has since been discontinued.

WAR DEPT. has established Signal Corps procurement districts at Wright Field, Dayton, O., to speed production and delivery of aircraft radio equipment. Heretofore, such equipment has been purchased by the New York Signal Corps procurement district, although the aircraft radio laboratory which performs the development work is at Wright Field. Centralization of development and procurement agencies is expected to reduce delays and inconveniences.

Navy Experiments

With Plastic Gliders

INCREASED interest in the use of wood-impregnated plastic for aircraft is being evinced by the Navy Dept. The seriousness of this interest is expressed in the new order for a fleet of 14 gliders, four of which will be made of plastic with a carrying capacity of 24 and 12 men, respectively.

In laying out its experimental glider program, the Navy Dept. awarded contracts for the craft to Snead & Co., Orange, Va., which will make the 24-place job, and Allied Aviation Corp. of Baltimore, contractor for the 12-place ship.

In addition, 10 two-place gliders have been ordered from Schweizer Aviation Corp., Elmira, N. Y.

The larger of the two transport types will have a span of 110 ft. and gross weight of 12,000 lbs. The smaller will have a wing spread of 88 ft. and gross weight of 6500 lbs.

"There are Hundreds More . . .

on the way to help finish the job"



On the occasion of his visit to the Consolidated plant, Lord Halifax inscribes a message to the British Prime Minister on the tail surfaces of a Liberator.

NIGHTLY from Newfoundland echoes the thunder of departing warplanes—heavy bombers taking off for destinations "Somewhere in England." Conspicuous among these are the Consolidated Liberators, long-range, high-speed, four-engine, 20-ton bombers, equipped with Curtiss Electric Propellers.

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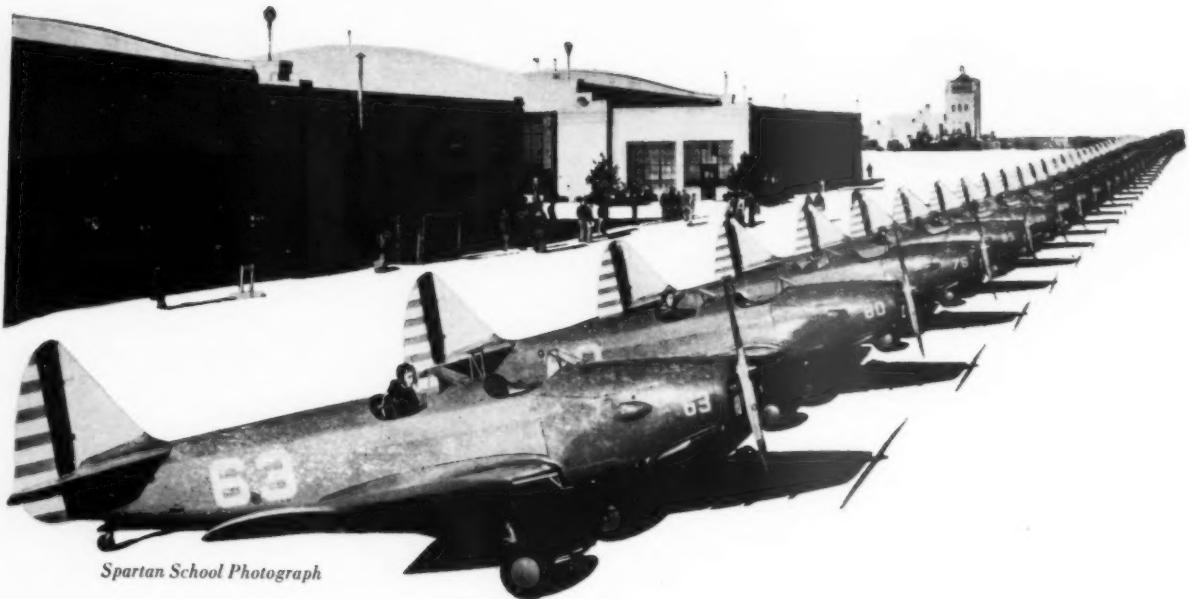
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Center Shows Mushroom Growth

Southeast Training 3,000 Flying Cadets

EMBRACING military and civil aviation schools scattered from the sandhills of South Carolina southward to the tip of Florida and westward to the flat lowlands of Louisiana, the Southeast Air Corps Training Center is rapidly gearing up to turn out thousands of airmen to meet the needs of the U. S. Army Air Forces and the British RAF.

In nine states where little more than a year ago a tactical school at Maxwell Field, Ala., stood as the sole Air Corps training unit, today there are 42 air schools operating or under construction.

With growth typical of the unprecedented expansion of Army flight training facilities during the past year, the Southeast Center has mushroomed in the corn and cotton fields, and boasts: (1) the first replacement center for Army aviation cadets, (2) the sole Army training unit in the U. S. for Negro pilots, and (3) facilities for the bulk of the 8,000 British flying students to be trained annually in the U. S. for the RAF.

Under the command of Maj. Gen. Walter R. Weaver, the SEACTC is headquartered at Maxwell Field, where the new replacement center with proposed capacity of 2,700 is located.

1,398 Airplanes

As of Oct. 1 there were 1,398 planes assigned to the SEACTC, including 560 Stearman PT-17s and 236 North American AT-6A trainers. Flying cadets totaling 3,000, including 1,400 Britons, were undergoing training in the area, with 782 additional trainees enrolled in the replacement center, 455 in navigation schools and 83 in bombardier units.

Since opening of the initial class in Sept. 1940, the center has graduated 2,135 pilots, bombardiers and navigators. More important, it has developed a mass production training assembly line ready to turn out airmen at accelerated rates both for the Army Air Forces and for the RAF.

Sixteen elementary, seven basic and four advanced air schools are now in operation in the southeast, in addition to several units specializing in gunnery and navigation, with five more advanced schools scheduled for activation next January. Those planned for operation



Night Patrol at the Southeast Center

early next year are single engine advanced schools at Dothan, Ala., Moultrie, Ga., and Tuskegee, Ala., and twin-engine advanced schools at Valdosta, Ga., and Columbus, Miss.

Under the present training pro-

gram, a new class of flying cadets enters the training center every five weeks. Before being fed into the hopper of elementary flying schools, operated by civilian contractors, the students are sent to the Maxwell Field replacement center for general seasoning. Academically the induction center is composed of two schools, the initial training school through which all cadets entering the SEACTC must pass, and the reconnaissance school which handles students training as bombardiers and navigators.

Other Projects Planned

While the replacement center at Maxwell Field is the first opened in the U. S., similar projects are planned for cadets in the Gulf Coast Training Center with headquarters at Randolph Field, Tex., and in the West Coast Training Center headquartered at Moffett Field, Cal.

British students washed out as pilots are sent to Maxwell Field, where a RAF officer selects a suitable number for training as wireless operators at the Navy's air station at Jacksonville, Fla. Those not sent to Jacksonville go to Canada for training as bombardiers and navigators or in ground service duties.

Some 5,000 of the 8,000 Britons to be trained for the RAF in the U. S. annually will get their flight instruction in the SEACTC.

40% Washed Out

While about 40% of all students are washed out in elementary flight training, the percentage of Britons eliminated as flying students is reported to be considerably higher.

At Tuskegee, Ala., an elementary flight school is currently operated for a group of 23 Negroes. When a basic school is opened at Tuskegee in mid-November, and a single-engine advanced school at the same spot next January, facilities will be available to complete the flight training of the first group of Negro pilots for the Army Air Forces.



U. S. Army Air Corps C-45A BEECHCRAFT Personnel Transports—Ready for Fly-away from Beech Field



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HIS lineup of C-45A Personnel Transports marks the completion of the second Air

Corps contract for BEECHCRAFTS equipped for transportation of Government and Army officials on Defense missions. Delivered almost a year ago was a quantity of similar BEECHCRAFTS designated as the Air Corps Type C-45 Personnel Transport. Both types are adaptations of the commercial Model 18S BEECHCRAFT which has gained widespread recognition as a fast, efficient airline and executive transport.

Two important contracts have been completed. Construction of approximately \$90,000,000 worth of additional BEECHCRAFTS for the Army Air Corps and Navy Bureau of Aeronautics is proceeding rapidly on a 24-hour-a-day basis. Deliveries are being made in constantly increasing quantities on Air Corps AT-7 navigation trainers, Navy Bureau of Aeronautics JRB-1 and JRB-2 utility and personnel transports, and GB-2 biplane BEECHCRAFT light personnel transports. Deliveries will soon commence on other adaptations of the versatile BEECHCRAFT design for various other military purposes.



As a service to present and prospective owners of commercial BEECHCRAFTS, during the National Emergency, the Beech Aircraft Corporation maintains free listings of all BEECHCRAFTS known to be offered for sale. Correspondence is invited from those owning or wishing to own BEECHCRAFTS.

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Joint Aircraft Committee Admits U. S.-British Friction; Denies Need for Unanimous Vote

ADMISSION of friction between British and American members of the powerful Joint Aircraft Committee was made Oct. 13 in a formal memorandum to Rep. Clarence Cannon (D. Mo.), Chairman of the House Appropriations Committee.

The memo, first official statement ever issued by the committee, specifically admitted that the British objected to allocation of plane production for the program to remove the Axis from Latin American airlines. It also stated that "there have been times when the British have not been in accord with the action taken by the committee as a whole."

Unanimous action is not required by committee procedure, the memo added, seeking to make it clear that the American majority on the committee can override British objections where necessary.

Signed by Maj. Gen. H. H. Arnold, chief of Army Air Forces; Adm. John Towers, chief of the Navy's Bureau of Aeronautics, and Merrill C. Meigs, chief of OPM's aircraft branch—the three senior members of U. S. agencies represented on the committee—the memo was in answer to charges made recently on the House floor by Rep. R. F. Jones (R. Ohio).

Attacked Membership

Rep. Jones had attacked British membership on the committee, particularly British participation in matters involving domestic airline equipment. He quoted from an editorial in *AMERICAN AVIATION*, Sept. 1, which questioned participation of the British with their "virtual veto power" in domestic plane problems.

Last summer, the British members forced transfer of U. S. airline equipment to Britain, Rep. Jones said. American representatives on the committee "voted against giving the British the transport planes . . . In this case they were planes which had been ordered some time previously by the commercial airlines of the U. S. They had been delivered in some instances . . . The British members walked out of the meeting and left the fate of these passenger planes hanging in the air . . ."

Hopkins Lobbies

British members then appealed to Lend-Lease Administrator Harry Hopkins who "lobbied" the American members and got them to rescind their former vote, giving 12 planes to Britain, he said. The planes were flown to Africa by Pan American Airways and "are now operating not as Army transport planes, as claimed, but in a commercial flying service," he added.

The British thus demonstrated "deceitful misrepresentations" damaging our own defense, he claimed, attacking the "short-sighted policy" of allowing the committee, with 25% British membership, "to control internal aircraft production."

He also said that British members objected to allocation of planes to Latin America—"a hemisphere defense project"—on the sole grounds that British transport needs were greater.

The committee memo frankly admitted Rep. Jones' last charge by stating that the South American aircraft program was approved "in spite of the British objection" and

that "some of the aircraft have already been delivered."

However, on the domestic plane transfer, the memo said it was "not true" that the British walked out of the meeting "in a huff," in order to veto action.

"It is believed that Mr. Jones has reference to the British offer to leave the discussion in the hands of the Army and Navy and OPM when the civil aircraft for commercial airlines case was discussed," it stated. "The other members of the committee declined to accept the British offer to withdraw because they felt that the British were intensely interested in all aircraft capacity. The British members did not at a single point of the discussion of this case raise any objection to any of the action contemplated or taken by any of the members."

"With reference to the request for transport planes mentioned by Mr. Jones, the committee informed the British members that there was no capacity available for the production of planes at the time for which they were needed."

Not Unanimous Action

Earlier in the memo, the American members said that "the procedure in the . . . committee does not require unanimous action by all members to approve an action taken. Although there is very little indication of British dissent in the minutes of meeting of the . . . committee because the actual vote has not been recorded, there have been times when the British have not been in accord with the action taken by the committee as a whole."

In closing, they said that in their

Uncensored at Last! How British Airliner Joined the Privy Council

For 10 months an anonymous editor on England's quaintly vigorous air journal, the *Aeroplane*, says he has been sending the same item to the censor. He wanted to brighten his pages with the story of how the *Fingal*, one of Imperial Airways' De Havilland airliners, came to her end.

Just as regularly as that story went to the censor, so did it return—always blue pencilled.

But finally the other day the censor relented, and here's the tale!

The *Fingal* suddenly developed serious pains while aloft one day and came down hastily on the nearest farm . . . just as any of us would do in similar difficulties. It skittered over the bumpy fields and hedges and came to rest, "apparently with shame and remorse, with its sharply pointed nose on a lavatory."

opinion there have been no instances where any committee action has "tied up our defense production of airplanes for our national defense."

Rep. Jones had also stated that although the British were willing to take equipment from U. S. airlines "they did not ask for any of the planes owned by the Canadian commercial airline (Trans-Canada) until after *AMERICAN AVIATION* exposed them. Then, and only then, belatedly, did Britain request two planes of the Canadian company." This statement was not answered in the memo.

New Planes to Step Up Army's Twin-Engine Training



The Curtiss AT-9

WITH increased emphasis on twin-engined trainers for advanced Army air schools, announcement has been made of the delivery of two new types of ships designed to instruct pilots for the complex job of flying fast multi-engined fighters and bombers of the Army Air Forces. Meanwhile, the War Dept. also revealed plans for two additional twin-engine advanced pilot training schools to be located at Valdosta, Ga., and Columbus, Miss.

Assurance that there will be a sufficient number of trained pilots to fly the Air Corps bombardment planes under the "500 bombers-a-month program" was given several weeks ago by Maj. Gen. H. H. Arnold, chief of the Army Air Forces.

This assurance was based upon the establishment of 14 two-engine advanced flying schools, 10 of which were previously announced, and a change in the eligibility regulations for multi-engine pilots.



The Beech AT-11

The two new planes, the AT-9 and the AT-11, were manufactured by Curtiss-Wright Corp.'s St. Louis plant and Beech Aircraft Corp., Wichita, Kan., respectively. Both types are all-metal, low-wing monoplanes—equipped with retractable landing gear.

The Curtiss AT-9, with a top speed of more than 200 mph, accommodates a crew of two but has provision for four, and incorporates the performance and operating characteristics of larger multi-en-

gined tactical craft, including numerous instruments. It will be manufactured in "large numbers" in the nearly completed Curtiss-Wright plant at Lambert Field, St. Louis.

The Beech AT-11 will be used for specialized training of bombardiers and gunners. It is equipped with flexible guns and bomb racks for the instruction of a crew of three or four men, depending upon the instructional mission. Power is delivered by nine-cylinder, 450-hp. Pratt & Whitney engines.

Doubled-Up Warplane Schedule in Offing

(Continued from page 1)

decided must be done to win the war will come in specific announcements, as with the tank production schedule, and in requests to Congress for double defense appropriations.

The initial role of the aircraft industry in the new effort will develop as a sharp increase in the output of four-engine bombers—25,000 to 30,000 heavy bombers—according to early plans now formulating in air defense policy circles where emphasis is continuing to shift rapidly toward offense-type aircraft.

Total production is envisioned as ultimately exceeding the 100,000 mark, including all types of military and naval airplanes, while 125,000 is a top figure seriously discussed. Incredible as the program seems from a practical viewpoint, the policy makers are setting a deadline of early 1944 for achievement of the new schedule.

While production experts and technicians are frankly dumbfounded at the assignment, they are beginning to collect their thoughts and make an attempt to translate the policy directive into a practical working program. As productive capacity, particularly in aircraft, is already considered strained to the limit, this is a task requiring the greatest effort in vision, industrial ingenuity and intelligent planning that aviation has ever been called upon to put forth.

Should Be Done

While the magnitude and ramifications of the objective are enough to stagger the most confident, the leaders of America's most modern industry realize that somehow or other the job should be done. The Administration's emissaries to the war zones report back that it must be done.

Nobody in either governmental or industrial aircraft manufacturing positions yet know how aircraft production can be doubled, beyond the general understanding that it will take "a combination of everything."

Roughly, it would require first the full utilization of existing facilities including whatever additional subcontracting can be squeezed from the automobile companies and from smaller commercial industries. Second, if this is not enough, existing facilities must be expanded. Finally, new plants would be erected.

Many Problems

Superimposed on these basic problems would be the multitude of related problems on which the overall scheme depends—questions of the acquisition of masses of new labor and the training of that labor; the housing of workers in congested production centers; provision for enlarged supplies of water, power and other public utilities including access roads which will allow enough workers to flow in and out of factories in short enough time to permit full-shift operations; location and production of critical materials, and the transportation of those materials from their source to the plants.

From each of these problems and many others like them, hundreds of lesser ones spring. For example, in spite of the pontifications and fanfare of Mr. Floyd Odum as head of the new OPM Division of Contract Distribution, the government's

experienced private business executives.

In any case, subcontracting on an expanded scale is likely to prove more successful in small arms production or less highly skilled types of manufacture than in aircraft.

As the "Victory Campaign" begins to take blueprint form and moves nearer to the assembly lines, still another factor must be solved before the program can darken the skies with airplanes—labor and management must learn to cooperate and strikes must cease.

War Dept. Prepares Huge Air Expansion

THE WAR DEPT. announced Oct. 23 a plan to expand nearly three-fold the manpower of the Army Air Forces.

"The enlarged program," stated the department, "contemplates an increase in non-commissioned strength of the Army Air Forces to more than 400,000 flying cadets and enlisted men by June 30, 1942. Subsequent expansion of personnel strength, possibly to the 500,000 level, is possible beyond that date."

The expansion, "to be carried out within the framework of the present Army Air Forces," points toward an increase in combat groups from 54 to 84. It is all, of course, merely a paper plan at the moment, insofar as flight activities for some months to come are concerned. But although long range, the program represents an immediate and vast step-up in military aviation training.

"Attainment of the objectives of the 84-Group Program will involve considerable expansion of recruiting and training activities," the an-

Oil Coordinator Ickes Sees Another Shortage

Defense Oil Coordinator Ickes called on Oct. 24 for "aggressive immediate" action by the oil industry to bring the daily output of 100 octane aviation gasoline to 100,000 barrels by Jan. 1, 1943.

Pointing out that this is 20,000 barrels short of the goal previously set, Ickes said indications are that even the objective of 120,000 barrels may not be enough to meet demands.

nouncement stated. "The 54-Group plan, which will be merged gradually into the larger 84-Group Program, contemplated an expansion of the Army Air Forces to 16,800 officers, 187,000 enlisted men, including enlisted men assigned from other Arms and Services, and 15,000 flying cadets. The rate of output of the training schools of the Air Corps was placed at 12,000 pilots and 48,000 technicians a year to meet requirements of the 54-Group Program. Subsequently, however, it was decided to increase the goal of the training program to 30,000 pilots and 100,000 technicians a year."

In Washington it is expected, as a result of the expansion, that when the War Dept. goes to Congress funds will be requested to an extent which will likely finance a doubling of military combat aircraft orders.

Proposed Victory Program Would Mean Doubling of Aircraft Tripling Plan

"TELESCOPING"—used to describe the newly proposed Victory Program—is not a new word to the aircraft industry.

No new aircraft production schedule had been announced as this was written, but under the old program . . . The industry turned out a greater dollar volume of planes, propellers and engines during the first six months of 1941 than in all 1940, and . . .

With defense officials and financial observers predicting a billion and a half dollar aircraft year for '41, the industry expects to increase its first half effort 40% during the second six months, yet . . .

Those same forecasters look forward to a three billion dollar aircraft business in 1942, and then a five billion dollar plus business in 1943—which adds up to better

than a three-fold increase in the next two years.

What it Means

On the dollar sign basis, it would mean a six billion dollar aircraft year in 1942, a 10 billion dollar year in '43.

Thus, when "doubling" is mentioned, as far as the aircraft industry is concerned, it means doubling piled on tripling, if that can be visualized.

What the defense program has already done to aircraft manufacturing may be seen in comparing the contemplated billion and a half dollar figure of 1941 with the \$225 million output in 1939 (last peacetime production year), and \$544 million in 1940.

The Aeronautical Chamber of Commerce is responsible for the report that the aircraft industry produced \$617,345,086 worth of planes, propellers and engines in the first six months of 1941.

The only known breakdown of aircraft deliveries by months for the first half of 1941, just revealed by Washington sources, places the first half total at \$622,000,000.

Month	Deliveries	Planes
Jan.	\$73,000,000	1,036
Feb.	86,000,000	972
March	99,000,000	1,216
April	120,000,000	1,389
May	121,000,000	1,234
June	123,000,000	1,476
Total	\$622,000,000	7,423

The unit plane deliveries listed above are official OPM figures. It is significant to note that while those deliveries declined between January and February and again between April and May, the total dollar volume of planes, engines and parts continued its steady advance.



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The Independent Voice of American Aeronautics

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ALL TIME IN AIR

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1942. DAVID SHAW, Managing Editor.

Fortnightly Review

(Continued from page 1)

even more unfortunate that Mr. Vinson and Rep. Gore of Tennessee should attempt to foist misleading and dangerous bills into the legislative mill in this crisis.

First and foremost, it is hypocrisy at its most cunning perfection to say that Mr. Vinson's bill would "limit" profits to 7%. If it did just that, and the industry were allowed up to 7%, a great many manufacturers would indeed be content. The American public—the investors, the taxpayers, the workers—can well be assured, however, that if Mr. Vinson's bill should become law, there would be no such thing as a 7% profit. The profit would turn out to be between 1 and 2%, or with no profit at all for many companies.

For out of the so-called profit must come state taxes of all kinds and numerous other costs not now allowed as cost items in government contracts but which are nonetheless essential to the operation of any business.

The bill would cripple all business, destroy the very economic basis of American industry, and defeat miserably the avowed purpose which has apparently motivated Mr. Vinson to propose the legislation: to prevent profiteering on defense contracts.

Of the \$56,000,000,000 appropriated and authorized to date for defense (including all lend-lease funds), approximately \$12,000,000,000 is for airplanes, engines, propellers and parts. The entire aircraft industry, thusly, represents about 20% of American industry which would be blanketed by Mr. Vinson's bill. It is one of the most sweeping legislative proposals pertaining to regulation of profits and the economics of business ever submitted to Congress and covers so much ground that no man, today, could tell where it would begin and end.

Profit limitation in itself is nothing new to the aircraft and shipbuilding industries, but it will come as a rude awakening to thousands of other companies who are included in the proposal for the first time. From 1936 until Sept. 1940, there was a profit limitation of first 12%, then 10%, and then 8.2%, on the aircraft companies. Profit limitation was then repealed when the excess profits tax system went into effect on the theory that the excess

profits tax in defense work would effectively prevent creation of a new set of war-time profiteering millionaires. Now Mr. Vinson comes forth with another profit limitation measure, far more stringent and far more sweeping in scope than anything that has come up before.

It would seem reasonable that the excess profits tax should not apply where there is already profit limitation. It is plain stupidity to make both apply to the same company. If the excess profit tax is faulty, then why have it plus profit limitation?

It is heartening to know that many members of Congress are aware of the aircraft industry's problems, hardships and accomplishments. In discussing with an AMERICAN AVIATION reporter the almost miraculous progress of aircraft manufacturing recently, Rep. J. Buell Snyder commented that it is "very unfortunate that the impression has gone out that the industry is making enormous profits." Others feel the same way. We intend to have much more to say in subsequent issues about the entire complex contract and profit picture. The nation can be justly proud of its aircraft industry and no distortion of the facts in a Congressional committee hearing shall be allowed to go unchallenged.

Mr. Budd's Sleight-of-Hand

THE ATTITUDE that air transportation is unworthy of serious consideration as a transportation medium, a supplemental frill tied in somehow with military flying, has not yet been eradicated from all of Official Washington.

The transportation commissioner to the National Defense Advisory Commission is an able railroad man, Mr. Ralph Budd, who is on leave as president of the Chicago, Burlington and Quincy Railroad. Mr. Budd made a few rather startling remarks recently in a speech given in Des Moines, Ia.

Although noting a "profound effect" which the entire field of aeronautics is making on transportation, Mr. Budd nevertheless goes on to say:

"So long as there is ample transportation by highway and railway, the shortage of airplanes means only slower traveling for those who are unable to secure air passage between points in the U. S. Under the circumstances, it seems that the extent that civilian aviation is allowed to expand during the emergency properly is left to the War and Navy Departments."

In all fairness to Mr. Budd, we presume he means that the Army and Navy need the airplane manufacturing facilities for military planes, hence the shortage of commercial craft.

But unless we are grossly mistaken, there is an attitude lurking in the background that air transportation is something far apart from transportation by highway and railway and that, being purely supplemental, it could as well be forgotten as not. It's nice to have it, of course, but after all this is war-time and the nation got along for several centuries without any flying machines.

Such an attitude reveals a complete basic misunderstanding of the very essence of air transportation. Transit by air is very definitely a part of the transportation system of the U. S. and is as valuable as any of the other media and much more valuable from the standpoint of saving time and speeding up defense. Stop air transportation and the entire business machinery of the nation is slowed down to the tempo of 1917-18, and that tempo is not good enough to meet the needs of today.

Like many others who have grown up in a world of slow ground transportation, Mr. Budd apparently has no real conception of the airplane as a transportation unit. Considering his position as transportation commissioner, we believe he is walking on thin ice when, with a flip of the finger, he shoves air transportation out of the realm of transport into the military. Or would he prefer to have the Army and Navy regulate railroads and trucks too? That makes as much sense as the other. But Mr. Budd can be re-assured that with an adequate fleet of commercial transports the men of American industry who cannot get space today won't have to undergo time-wasting tiresome three-day transcontinental trips in order to accomplish important war-time business. They'll make their journeys comfortably overnight.

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Wise Decision

IT IS our opinion that the Civil Aeronautics Board acted wisely in ending suddenly its investigation of the citizenship of Marquette Airlines, thereby removing the last red tape and obstacles to the acquisition of Marquette by Transcontinental & Western Air, Inc. It was an extraordinary decision in which three members considered the stabilization and future of the air transport industry to be more important than the prolonged litigation and investigation into Marquette's past. Two members dissented on grounds that the public interest would not be adversely affected by pursuing the investigation to the end.

"We do not give our blessing to a doubtful past," the majority decision of Branch, Warner and Ryan said, "but we clear the way for the growth and development of our air transportation system in the affected area which, in this case, we judge to be more important." We believe this attitude to be commendable and to be a realistic response to the public demand for expeditious and far-seeing action at a time when far greater problems require thought and action than the pursuance of a relatively unimportant litigious investigation.

Pro, Con and Otherwise

Farewell?

SIRS: incur a nasty fall. Hope I have sense enough to take his advice in the future.

I want to thank you again for printing my letter and assure you again that, come what may, I will write no more letters on this subject. I still think you have the best periodical in your field and I shall continue to look forward to its arrival with interest and pleasure.

CHICAGO, ILL. A.E.D.

Delving

SIRS:

With reference to a letter from "An Airline Official" which appears under "Pro, Con and Otherwise" on page 25 of the Oct 15, 1941, issue—

It appears that "An Airline Official" did not delve deep enough into the study of the Civil Air Regulations, and as a result of his letter, many of your readers may also be misinformed. It is for this reason that I too, write you.

Those interested may turn to C.A.R. 61.518 pertaining to flight time limitations. C.A.R. 61.5183 does state "A first pilot shall not fly in scheduled airline service as a member of the crew more than 100 hours in any one month." Now, if "An Airline Official" wants to get technical, he should read C.A.R. 61.5184. It states "A first pilot shall not fly in scheduled airline service more than 1,000 hours in any calendar years"; 1,000 hours divided by 12 months simply means 83 hours and 20 minutes per month.

"An Airline Official" winds up his letter by saying "It is unfortunate that so many in the airline industry and those in the government service having to do with airlines do not quite understand that there are two separate rules—one which has to do with safety and the other which has to do with labor."

The difference between the safety law—83:20 and the Labor law—85:00 is equal to 1 hour and 40 minutes. It, therefore, appears that labor is asking no favors of "An Airline Official," but actually is



stretching the point in his favor. Such leadership!!!!

CHICAGO, ILL. Q.J.S.

Spin Proof

SIRS:

I read with great interest your article in the Oct. 1 issue on military uses of lightplanes. It appealed particularly to me because in 1939 George Brew and myself tried to promote this idea, including the use of two-control airplanes for aerial torpedoes, but we banged up against the usual stone wall.

In passing, I would like to mention a fact frequently ignored in the various publications, and likewise ignored in your article, viz: that the Gwynn Aircar was the first stall-proof, spin-proof airplane to receive an Approved Type Certificate. At the time which we received it (1938) there were no regulations under which such an airplane could be approved, and the Gwynn Aircar Co. had great difficulty in getting approval of an airplane to regulations which did not exist. The Aircar would not spin and was flight tested by the CAA, and the flight test proved that it would not spin. It was not, however, rated as "characteristically incapable of spinning" because the CAA had not gotten around to recognition of the desirability of such a feature.

The Gwynn Aircar was never put into production, but you can no doubt still find the records at the CAA of this award of ATC #682.

J. M. GWYNN, JR.
CONSOLIDATED AIRCRAFT CORP.
SAN DIEGO, CALIF.

(Reader Gwynn is correct in stating that the Aircar was assigned type certificate No. 682 in 1938, but not in his claim that it "was the first stall-proof, spin-proof airplane to receive an ATC." Two Stearman-Hammond models, awarded type certificates No. 599 and No. 644 in 1936 and 1937 respectively, like the Aircar were adjudged spin-proof according to the testing criterion in effect at the time, although there was then no provision, as now, for placing planes of that type as "characteristically incapable of spinning."

However, we assure Mr. Gwynn that no slighting of the Aircar was intended. appreciate the mention of his 1939 promotion attempts—The Editors.)

Calendar

OCT. 30-NOV. 1—Society of Automotive Engineers, National Aircraft Production Meeting, Biltmore Hotel, Los Angeles, Cal.

OCT. 31-NOV. 2—Aero Medical Association, 13th Annual Convention, Hotel Statler, Boston, Mass.

NOV. 5-6—West Coast Transportation and Maintenance Meeting, Sponsored by the Society of Automotive Engineers, Fairmont Hotel, San Francisco, Cal.

NOV. 7-11—Defense Exposition, Kansas City, Mo.

NOV. 10-12—Engineering and Maintenance Committee Meeting, Air Transport Association, Cleveland, O.

NOV. 10-13—National Aircraft Standards Committee, National Meeting, Lexington Hotel, New York, N. Y.

NOV. 11—Junior Chamber of Commerce Air Show and Dedication of Braniff Airways' Operations and Maintenance Base at Love Field, Dallas, Tex.

NOV. 13-14—National Transportation and Maintenance Meeting, Sponsored by the Society of Automotive Engineers, Hotel Statler, Cleveland, Ohio.

NOV. 28-DEC. 7—International Aviation Show and Light Plane Exhibit, Convention Hall; Headquarters, Detroit Le'and Hotel, Detroit, Mich.

DEC. 1—Air Line Mechanics Association, Annual Convention, Del Prado Hotel, Chicago, Ill.

DEC. 1-2—National Aviation Training Association, Annual Convention, Kansas City, Mo.

DEC. 1-5—American Society of Mechanical Engineers, Annual Meeting, Hotel Astor, New York, N. Y.

DEC. 4—Dedication of New Factory of Curtiss-Wright Corp.'s Airplane Division, Port Columbus, Columbus, O.

JAN. 9-11—All-American Air Maneuvers, Municipal Airport, Miami, Fla.

JAN. 10-11—Dedication of Bomber Assembly Plant to be Operated by North American Aviation Inc. at Fairfax Airport, Kansas City, Kan.

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After the War . . . What?

Jouett Predicts Trends in Aviation's Future

By COL. JOHN H. JOUETT
President, Aeronautical Chamber of Commerce

IT IS extremely precarious in this age of fast moving events to look ahead five years into the post-war period, yet in this discussion on the future of aircraft production in the United States, I am going to do just that.

To begin with, I suggest that if Britain emerges victorious and a rather severe peace is imposed, a fair estimate on the dollar volume of annual production for the entire American aircraft industry at the end of the fifth post-war year might be \$593,500,000. (Dollar volume of the industry was \$544,000,000 in the year 1940, and \$617,000,000 in the first six months of 1941.)

The \$593,500,000 estimate must be considered maximum. From the first to the fifth year after the war, all aircraft items except the military will be gradually increased. After the fifth year, military production can be expected to fall off at a rapid pace.

Such conclusions represent very optimistic thoughts on a highly problematical future, and must of necessity involve guesswork because of the many variables in any equation used.

This outlook, to begin with, envisions a post-war effort to maintain an adequate national defense, with a slow decline in the effort, due to the lack of defense appropriations. I look for these appropriations to fall off, under such a post-war situation, in direct ratio to the elapsed time after the horrors of war were present and to the weight of taxes bearing upon us.

It is possible, of course, that more of a stalemate than victory will result, and that such a post-war situation will never develop. But this possibility suggests either continued expansion of the present production effort or an armed camp condition, neither of which lends itself to plausible evaluation of what the aircraft industry's future might be in this country.

Therefore, these general thoughts on the future of aircraft production in this country are predicated on a post-war situation as described. Denying any claim to a gift of pre-science, I realize that almost every point can be argued. However, I present the following observations for what they are worth.

Military Requirements

The Army and Navy should have about 24,000 planes on hand at the end of the emergency. They will make an effort to maintain adequate air forces about as follows:

Combat Types	Army 8,000
	Navy 4,000
Training Types	Army 8,000
	Navy 4,000
Total (all types)	24,000



Col. John H. Jouett

An annual replacement of 25%, or 6,000 planes, will be necessary to take care of obsolescence, as well as losses.

Assuming an average cost of \$70,000 per plane of all types, 6,000 planes per year will equal \$420,000,000. Military plane costs can be averaged as follows: airframes, 56%; engines, 20%; instruments, 24%.

Roughly speaking, it will cost our military service an additional billion dollars annually to maintain and operate the air forces.

Since each post-war year will find it more difficult to obtain appropriations of such proportions, our military establishment will be reduced year by year, with the air forces sharing in the reduction.

Surplus Equipment

Surplus military equipment will be available on a worldwide scale after the war. Without measures to prevent this equipment from being thrown on world markets at almost nominal prices, a serious threat to post-war business might easily develop.

That situation, on a much smaller scale, reduced production to practically nothing in 1919. Commercial models as we now know them were lacking at that time.

It seems certain that operators after this war will desire planes that they can operate at a profit.

Our modern commercial ships are capable of economic operation, and improved models will be forthcoming. Military planes will not provide the same type of competition that they did in 1919.

Thus, I doubt that military surplus sales will seriously interfere with post-war commercial and private business.

Although it is difficult to estimate future increases in domestic air mail and passenger trunk lines, predic-

tions can be made on the basis of current trends.

Transport Needs

If we assume a 200% increase in passenger miles flown in the five years after the emergency and assume that presently projected types are in operation, we visualize between 650 and 700 airliners in operation at the end of the fifth year.

(I base the above estimate on the fact that at the end of 1940 the domestic air carriers owned and operated about 330 planes of all types, on an increase of 35% in passenger miles in 1939 over 1938, and 53% in 1940 over 1939, and on the knowledge that currently projected planes will have twice the present seating capacity.)

Assuming a replacement need of 20% per year, we would have an annual need of 132 airliners. Roughly estimating the cost of these at \$200,000 each, the annual output for airliners would be \$26,400,000.

Smaller planes, less costly to operate, would be used by air mail and passenger feeder lines. Five years after the emergency, perhaps 1,200 of these will be in operation. At an annual replacement rate of 20%, this would mean an annual need of 240 planes. If these cost \$100,000 each, the annual output would be \$24,000,000.

Air cargo will unquestionably receive a great impetus in the post-war period as a result of weight-carrying progress made during the present conflict. Acknowledging the effect of stringent economic conditions on air cargo as an unknown quantity, I will assume a demand for cargo trunk line planes equal to passenger trunk line planes (132), but costing 75% as much. This would mean an annual output of \$19,800,000 for cargo planes.

Using the same line of reasoning in considering the demand for air cargo feeder lines, the annual output five years after the emergency would amount to \$18,000,000.

In regard to trans-oceanic demands for air mail-passenger and cargo planes, I base my estimates on the fact that Pan American Airways System (including Pan American-Grace and all subsidiary companies) operate about 130 planes at present. Using expansion factors applied in connection with domestic air mail-passenger and cargo planes, this means a need for 260 trans-oceanic passenger planes and a like number of cargo ships. Figuring on the annual replacement of 52 passenger planes equal to \$10,400,000 and 52 cargo planes equal to \$7,800,000. The result is an annual output of \$18,200,000 for trans-oceanic equipment.

Recent developments prompt me to make the very optimistic prediction of 100% U. S. built planes in Latin America after the present emergency, although an official British mission, I understand, is now working on plans for their

Col. Jouett estimates:

ANNUAL U. S. AIRCRAFT PRODUCTION	
Five Years After the Next Armistice	
Military Services	\$420,000,000
Passenger Trunk Lines	26,400,000
Passenger Feeder Lines	24,000,000
Cargo Trunk Lines	19,800,000
Cargo Feeder Lines	18,000,000
Trans-Oceanic (all types)	18,200,000
Latin-America (all airline types)	37,100,000
Commercial and Private	20,000,000
Commercial and Private (Latin America)	10,000,000
Total	\$593,500,000

own postwar business. Again assuming a 200% increase by the end of the fifth post-war year and considering projected equipment, the Latin American demand adds up like this:

Passenger, trunk	280
Passenger, feeder	500
Cargo, trunk	280
Cargo, feeder	500
Total	1,560

Annual replacements for Latin America would be about as follows:

Passenger, trunk	\$11,200,000
Passenger, feeder	10,000,000
Cargo, trunk	8,400,000
Cargo, feeder	7,500,000
Total	\$37,100,000

Sales of planes to Latin America for fixed base operators and private flying at the end of the fifth post-war year should amount to about \$10,000,000.

World Market

Actual output for the world market in general will be dependent upon so many factors that it is impossible to estimate the needs at this time, but it is my belief that Latin America will be our major market; China will obtain its initial needs from us, but will develop her own aircraft industry with U. S. technical help; Africa, India, Canada and the Antipodes will be Great Britain's market.

Commercial and Private

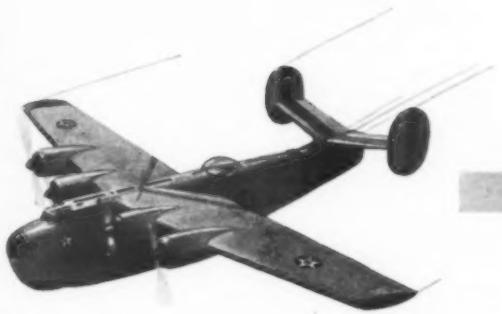
Total output might be estimated at about \$20,000,000 directed principally at private flying and schools. I do not believe that charter services, photographic services, private executive use of planes and the like will amount to much of the grand total, although there is a very definite field here, the development of which will be determined by economic conditions.

Wings for our way of life!



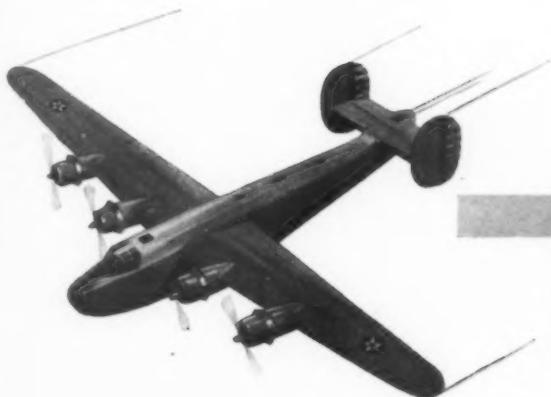
PBY - FLEET AIREE

- far-ranging vanguard of the world's most powerful Navy.



PB2Y - FLEETSTAR

- shining star in the firmament of the U. S. Navy.



B-24 - LIBERATOR

- hope from the sky for millions now oppressed.



CONSOLIDATED
Aircraft CORPORATION

ESTABLISHED 1923

SAN DIEGO, CALIFORNIA



RAFT
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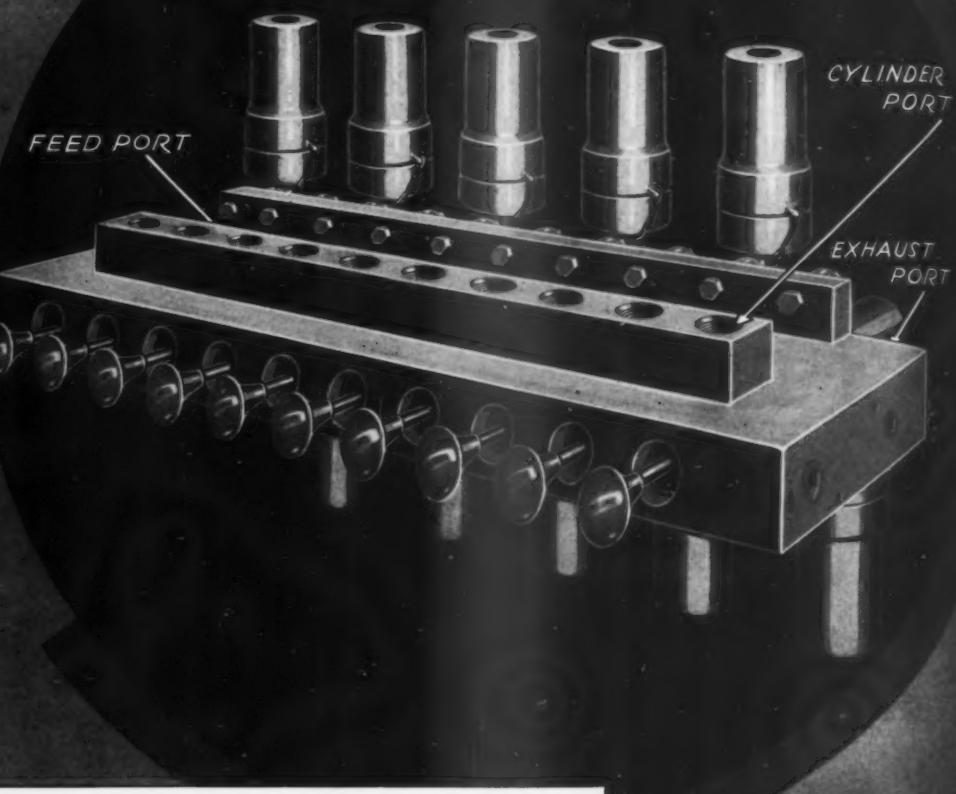
Announcing

NEW FLEETWINGS GUN-CHARGING HYDRAULIC VALVE

Charges 10 Machine
Guns Individually or
Simultaneously

LOOK AT THESE FEATURES

- Provides, in a SINGLE unit, means for charging ten machine guns, individually or simultaneously, with an automatic mechanism for returning valve to neutral.
- A simple, one-half inch pull of the proper valve stem will operate the desired cylinder.
- Provision made for operating each unit manually, in case of electrical failure.
- Weights less than 18 pounds and can be furnished for any number of guns.
- Will operate without seizure from lower than minus 40 degrees F. to above 200 degrees F.
- Valve is practically free from wear, scuffing is entirely eliminated, and seizure is avoided.
- Fully balanced—requires a minimum force to operate.
- Design ensures extremely easy disassembly and assembly.
- Normal operating pressure can be carried up to 1500 pounds per square inch, test pressures to 4000 pounds per square inch.



Reduces Installation Parts Ordinarily Required by 60%

To the airplane engineer who is eager to build simplicity into fighter airplanes, this new valve, Type B-10-C, should be of real interest. Why? Because it greatly simplifies the task of gun charging, makes this operation faster and more perfect. It takes the place of ten separate hydraulic valves, and reduces by 60 per cent the amount of tubing, connections, and fittings ordinarily required, and furthermore, reduces original installation time and cost and lowers repair and maintenance expense.

Our Hydraulics Department will be glad to submit detailed information to you about this new valve, and they'll welcome any inquiry you might have about any of the large line of Fleetwings' hydraulic equipment. Why not write today?

SOON TO BE ANNOUNCED

A new gun-turret valve that operates at a remarkable speed, enabling gunner to maintain continued fire on a moving target. Light in weight, it assures precise, uniform control. If you're interested, write Fleetwings, Bristol, Penna.

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BRISTOL, PENNA.

Auto Leaders Plan Far Ahead For Huge Aircraft Program

By CHARLES ADAMS

THE AUTOMOBILE industry is hacking away at aircraft defense orders with plans for turning out—two years from now—at least one-third of the total dollar volume of aeronautical products manufactured in this country.

This big newcomer to aircraft, after a somewhat sluggish start, is shooting at a 1942 goal of one billion dollars worth of planes, engines, propellers and parts, and expects to double that figure in 1943.

If the two billion objective is realized in '43 as now planned, it means that the automobile industry will be manufacturing a greater dollar volume of aviation products two years hence than it did of passenger cars in 1939.

Equal To Cars

Even in 1942 it is possible that the nation's automotive firms will produce aircraft goods equal in dollar volume to passenger cars, for, on the basis of the current auto curtailment schedule, a billion and a half dollar passenger car year in 1942 is considered a generous estimate.

There is little doubt that by '43 U. S. motor car manufacturers will be predominantly aircraft manufacturers.

And they are in the aeronautical business to stay—these automobile producers who to date have played only an insignificant part in U. S. aircraft production. At least, most Washington observers are confident this is so.

Thus, the automotive industry, in relation to the established aircraft industry, will undoubtedly shift from its present role of defense collaborator to post-war competitor.

CIO Charges Delay

As to the so-called delay of automotive firms to get into the thick of aircraft production, the complete answer is well hidden in the maze of defense production problems. CIO leaders charge the changeover from car to aircraft has been slow because automobile firms have hesitated to do anything with their capacity which might interfere with civilian output. Office of Production Management spokesmen deny a delay, refer to the tremendous tooling up job involved, and claim the automobile industry has done all that it was expected to do.

There is no dispute over the fact that thus far in the defense program it has been almost entirely aircraft companies who have brought military plane production from a few hundred a month in the spring of 1940 to nearly 2,000 in September of 1941, and who boosted engine

output from 1,000,000 hp. monthly in August of 1939 to more than four times that figure two years later.

That the automotive industry's contribution to aircraft production has been small may be seen in an analysis of General Motors' aeronautical activity.

This firm, with about \$625,000,000 in orders for engines, propellers, parts and equipment, has, since the defense program got under way, delivered less than \$75,000,000 worth of these items, and probably all but a small part of this \$75,000,000 came from the Allison division, usually recognized as an aircraft rather than automobile concern.

G. M.'s volume aircraft output is almost wholly a thing of the future. Pratt & Whitney engines, for which Buick and Chevrolet hold

automobile firms now being geared to aircraft production.

Typifying the influence of automobile concerns on aircraft output in 1942 and 1943 is the Pratt & Whitney engine program. Practically all of this type of unit are now being constructed at Pratt & Whitney's home plant in East Hartford, Conn. There the horsepower output is running at about 1,800,000 monthly.

Ford, most advanced of Pratt & Whitney's three automobile licensees, is just now beginning to achieve volume production.

However, by next July, Ford and Buick will be turning out P&W's at a rate of 1,300,000 hp. monthly while the East Hartford plant moves up to 2,000,000 hp. a month. By January of 1943, with Chevrolet add-

Two Billion for Aircraft

Aircraft orders to the automobile industry from Sept. 1, 1939 to Sept. 1, 1941 totaled \$1,979,000,000, up approximately \$500,000,000 since July 1, according to the Automobile Manufacturers Association. This figure includes letters of intent, subcontracts and prime awards as well as orders to Allison division of General Motors.

The automotive industry's total defense awards to Sept. 1, including motor vehicles, ordnance items, etc., aggregated \$3,530,000,000.

around 600 units monthly expected by spring and between 800 and 1,000 a month by January 1943.

Ford: 2,000-hp. P&W Double Wasp. Buildings essentially complete and majority of machines and tools on hand.

Production reported to have reached one unit daily in September, and is scheduled to hit 300 units monthly early next year, 550 by July. Goal of over 1,000 units monthly is set for July 1943.



Ford's Own Tool and Die Works at River Rouge
Auto Industry Plunges Vast Facilities Into Aircraft Effort

\$218,000,000 in orders, will not be coming off the assembly lines until next year, with peak production to wait until 1943.

The same is true of volume deliveries on \$70,800,000 worth of hydraulic propellers for the Air Corps by Aeroproducts division and \$66,000,000 in North American bomber parts and assemblies by Fisher Body division.

With the exception of Briggs, which is now turning out more than 100 different parts, and may reach a delivery rate of 4,500,000 monthly early next year, a parallel situation exists at Ford, Studebaker, Hudson, Chrysler, Murray and other

ing its output to Ford and Buick, the three automotive firms will be producing around 2,800,000 hp. monthly, compared to 2,400,000 hp. at East Hartford.

In July 1943, aircraft engine production at the East Hartford plant will be 2,800,000 hp., automobile licensees 5,000,000 hp.

Briefly, the official status of the aircraft engine program of the automobile companies at present is as follows:

Packard: 1,050-hp. Rolls-Royce liquid-cooled Merlin XX. Buildings complete, machines and tools over 85% on hand. Production began in August but is still slow, with

Buick: 1,200-hp. P&W R-1830 for Consolidated B-24 heavy bomber. Buildings are essentially complete. Equipment will be largely on hand early next year.

Production scheduled to exceed 150 units monthly by next July, 800 monthly by January 1943 and 1,000 monthly by July 1943, according to present estimates.

Studebaker: 1,200-hp. Wright R-1820 for Boeing B-17E. Buildings virtually completed. Over one-third of machine tools installed. While company hopes to have an initial engine ready in January volume production is not scheduled.

(Turn to page 24)

From Wheatfields to Warplanes

Bell's Speedy Methods Roll Out 'Cobras'

By WAYNE W. PARRISH

ON A COLD autumn day in 1940 with the wind blowing in strong from Lake Erie, Larry Bell, short, stocky president of Bell Aircraft Corp., waved his hand out in the direction of a wheat field and told a group of newspapermen, "I'll be building airplanes on this spot a year from today."

Exactly a year later—on Oct. 8, 1941—this group of newsmen returned to that spot near Niagara Falls, N. Y., and trudged through acres of plant space alive with productive activity. Larry Bell not only made his promise come true, but had his plant producing at full speed several months in advance.

Production figures are supposed to be very restricted these days, but we can say that Bell is now turning out more than half a dozen of his famous Airacobras each day. This output is evenly distributed between the new plant and the older plant on Elmwood Ave. in Buffalo, 16 miles to the south. The new Niagara Falls factory matched the Elmwood output on this autumn day of Oct. 8.

Right now Larry Bell's organization thinks, sleeps and all but eats one thing—Airacobras—knowing full well that this trim, fast, heavily-armed and heavily-powered pursuit which round Bob Woods designed is one of the few military airplanes universally liked by British and U. S. officials and by pilots and ground men of both countries.

The first production Airacobra flew Sept. 8, 1940. It wasn't until July of this year, however, that they began coming off the line fast. The

first 50 or 60 of the British order are now in England. They hadn't seen actual battle as yet on Oct. 8, but Larry was awaiting reports hourly on their first actual air tussle.

By the time this is printed, the Airacobras will undoubtedly have had their first baptism of fire.

Airacobra Has Become Household Word in U. S.

More than almost any other military airplane in the U. S., the Airacobra has captured the imagination of the U. S. public. Perhaps it's the name, linked to that of the deadly Cobra. Perhaps it's been good press work. The public probably knows little about the plane's actual performance but it wants to see it on the ground or in the air. At airfields in the war maneuvers, and at certain other Army airports, Airacobras have become a common sight within the past few months.

Its speed? One newspaperman sent out a story the other day telling of an Airacobra diving 600 mph. But no such fighting performance is claimed. It's one of the fastest in the world, which should be sufficient. It's nowhere near 600 mph, but it's plenty fast regardless. Any airplane that can reach 400 mph. under ordinary conditions, without staging a special dive for the benefit of newspaper headlines, isn't doing badly.

Today's Airacobra is noteworthy more than anything else for its armament and fire power. The 37-mm. cannon which protrudes from the propeller hub is a deadly weapon in itself. There are machine guns in the fuselage and wings. To this fire power has been added almost 1,000 pounds of armor plate and bulletproof glass, the plate being



Lawrence D. Bell

three-fourths inch thick. Leak-proof gasoline bags, that is, about as leak-proof as they come these days, have been added in the wing.

The Allison liquid-cooled engines, now coming through pretty much on schedule, are giving more driving power than they did in the early Airacobra models. Engine and plane are an attractive couple.

As far as our Army Air Corps is concerned, the Airacobra record is known to be excellent. In the past year 3,500,000 flying miles have been built up with more than 11,000 hours of flying time. Not once in this period (and this has authoritative backing) has the extension drive shaft caused trouble. Not once has

there been a nose-over, or danger of a ground loop. No less than 11 Airacobras participated in the Army maneuvers in Louisiana and more are taking part in the North Carolina "war games" now in progress.

A visit at the Bell plant proves that more than the usual attention is given to flight research. No Hollywood atmosphere surrounds the flight testing and research. It's all strictly business.

Chief Test Pilot is Robert M. Stanley, a Cal Tech graduate with Navy training and United Aircraft background. The others are Frank H. Kelley Jr., a Californian and aeronautical engineering graduate of the University of Washington who came to Bell from United Aircraft; Mark Heaney, who has been with the Marine Corps and Curtis Wright; Jack Woolams, youngest of the group (24), a graduate of the University of Chicago who spent two years with the Air Corps at Kelly and Barksdale Fields; and Arthur W. Nelson, who joined Bell in September of this year from Westchester Airport at Armonk, N. Y., and who has had five months active duty with the 109th Observation Squadron at Camp Beauregard, La.

Bell Mass Production Methods Show Results

On the production side, Bell has gone far to bring about a form of mass production. Perhaps the most notable achievement of a spectacular year has been the reduction of 50% in man hours required to build a 'Cobra. Bell officials believe it to be the biggest man-hour cut in the industry.

This was partly a result of the reworking of about 30% of the original Airacobra design so that 100% lofting could be adopted. As one official explained it, 100% lofting means cutting steel templates of every one of the 9,000 Airacobra parts, just as a tailor makes his paper patterns, so that blueprints aren't needed during fabrication or assembly operations. After that, semi-skilled labor is about all that's required. Bell jumped its employment from 3,000 to 10,500 in one year and claims it could add another 5,000 if needed.

Mechanical assembly lines providing constant motion have been installed at the Niagara Falls plant. The plant opened with two lines in operation, but four more are about ready, and the fifth and sixth lines will open later. Work has been carefully planned so that operations scheduled for one station are easily completed before the fuselage has moved on, at a rate of a fraction of an inch a minute, to the next.

Bell's backlog is up to \$175,000,000. And the company doesn't own a single plant. The Buffalo plant is leased and the Niagara Falls plant was built and is owned by the government. After the emergency, Bell will not be faced with owning acres of useless plant space.



'Cobras Sparkle in Synthetic Daylight at Niagara Falls

Walkout Menace Seen as Threat to 'Victory' Plan

Further threats of paralyzing strikes marred the aircraft labor scene during the past fortnight, and in the walkout menace industry spokesmen saw an ever-present deterrent to any "victory program" designed to spur plane production.

Indication that government officials are showing increasing impatience with strike interferences with defense production also grew in recent weeks. President Roosevelt, in his message to the AFL convention, declared that "the time has come" . . . when the services of the government's mediation machinery . . . "must be used before any recourse is taken to a strike or lock-out."

At this writing, as the CIO's intensified aircraft organizing and wage raising campaign on the East Coast held new threats for industrial peace in that area, the labor picture showed the following developments:

AIR ASSOCIATES strike, begun Sept. 30, was reported settled Oct. 24 following a conference between the company's directors, War Under-Secretary Patterson and OPM Director-General Knudsen. Under the agreement, all employees on strike were to return to the payroll and be placed in their former positions as fast as possible.

Commandeering Considered

Thus ended, temporarily at least, a labor dispute that had brought official consideration of plans to commandeer the plant or withdraw government orders because of a controversy over reinstatement of striking members of the UAW-CIO.

Air Associates holds \$5,000,000 worth of aircraft parts orders.

BELL AIRCRAFT Corp.'s dispute with the CIO was certified Oct. 24 to the National Defense Mediation Board, with a hearing set for Nov. 5. The Board urged both parties to "refrain from any action which might aggravate the situation or render the controversy most difficult to solve."

Strike Vote Taken

The CIO earlier had voted to strike at Bell's two plants in Buffalo and Niagara Falls, N. Y., but decided to withhold action "until all possible means of arbitration have been exhausted." Union demands include a 20¢ an hour general wage increase; 25¢ boost in minimum starting wage; union shop and the checkoff.

Involved are around 11,000 workers and a \$175,000,000 backlog, largely for Airacobras.

CONSOLIDATED AIR CRAFT Corp.'s strike threat appeared ended last month with the signing of a contract with AFL machinists. The agreement is understood to provide for increases in beginning wages to a 60-75¢ hourly scale, as well as a 13¢ blanket raise for men already earning more than 65¢. The work week was also cut.

Funds Spent on Aircraft Plant Expansion for Defense Approach One Billion Dollars

Personnel on the Move

Robert B. Kinhead, lieutenant in the public relations branch of the Army Air Forces for the last 14 months, has been released from active duty to accept a new position as assistant to **James P. Murray**, vice president of Boeing Aircraft Co., and will officially take



Dolan Kinhead

and general manager of United Aircraft Products Inc., Dayton, O., has been elected vice president of Greenfield Tap and Die Corp. He will also act as general manager of the corporation. . . **Earl C. Maund** has been appointed in a sales and engineering capacity at the Chicago office of Manning, Maxwell & Moore Inc. of Bridgeport, Conn. . . New appointments in General Electric's aeronautics equipment division involve the promotion of **Bruce R. Prentiss** to engineer and **Kenneth K. Bowman** as assistant engineer. . . Sperry Gyroscope Co. Inc., Brooklyn, N. Y., has revealed the appointment of **E. C. Sparling** as chief engineer and **M. L. Patterson** as general sales manager. **P. R. Bassett**, vice president in charge of engineering, will retain executive direction of engineering activity and the new chief engineer. At the same



Sparling Patterson

over new duties in Boeing's Washington office Nov. 12. Before his service with the War Dept., Kinhead was with United Air Lines for seven years. . . Appointment of **Charles H. Dolan** as general manager of the newly formed aviation division of Chicago Pneumatic Tool Co. is announced. . . **Joseph F. McCarthy**, controller and secretary of United Aircraft Corp., has resigned his position as secretary to devote full time to the expanded duties of chief accounting and financial officer of the company. . . **Charles H. Chatfield**, formerly director of research for United Aircraft, has been made secretary. . . Stockholders of Northrop Aircraft Inc. have elected two new directors—**T. C. Coleman**, vice president of sales, and **Graham L. Sterling, Jr.** of O'Melveny & Myers law firm, Los Angeles. . . Appointment of **O. W. Tupper** as an administrative assistant on the staff of **P. G. Johnson**, president of Boeing Aircraft Co., is announced. . . **Harry L. Bill**, formerly president

WITH THE expansion program still far from complete, new aircraft facilities built since the defense effort got under way have already cost almost a billion dollars.

An analysis of figures released by the Office of Production Management, and covering projects costing over \$25,000, shows:

- Aircraft leads all other industries in construction of new defense facilities.

- More aircraft expansions were financed by private funds than public, but . . .

- Projects using government funds were, on the whole, much larger than those privately-financed.

- While defense industries as a group have used four dollars of government funds to one dollar of private money for expansion, the ratio in aircraft is more than eight to one.

Of the \$4,725,786,000 in public and private funds used for all types of defense plant expansion, \$908,764,000 went for new facilities to manufacture aircraft; \$831,832,000 to produce ammunition, shells, bombs, etc.; \$643,364,000 for chemicals (including explosives); \$593,443,000 for shipbuilding and \$505,153,000 for iron and steel products.

Through Aug. 31, the total number of emergency aircraft plant expansions costing over \$25,000 was 308, of which 169 were privately financed and 139 publicly financed. However, in dollar volume the breakdown was: public funds used \$809,712,000; private funds \$99,052,000.

Four industry groups—chemicals-explosives, ammunition, guns, and shipbuilding—of the 11 defense categories listed, used a greater ratio of government to private funds than did aircraft.

Lycoming Gets Funds For Engine Facilities

Lycoming Division of Aviation Manufacturing Corp. received the largest chunk of Defense Plant Corp. funds allotted for aircraft facilities during the past few weeks, getting authorization to construct a \$3,714,277 unit at Williamsport, Pa., for the production of training plane engines.

Other recent DPC commitments for aircraft are:

Eastern Specialty Co., Philadelphia, Pa., \$100,331 for machinery and equipment to be used in the manufacture of aircraft jewel bearings.

Houde Engineering Corp., Buffalo, N. Y., \$731,000 increase in present \$38,865 commitment for additional facilities to be used in production of landing gear equipment.

Scintilla Magneto Division, Bendix Aviation Corp., Sidney, N. Y., \$645,308 increase in present \$2,550,000 authorization for additional facilities to manufacture aircraft ignition equipment.

Clarke Aero-Hydraulics Inc., Pasadena, Cal., \$87,535 for equipment to manufacture hydraulic components for aircraft.

Holley Carburetor Co., Detroit, Mich., \$98,708 increase in original \$661,415 commitment for additional facilities to produce aircraft carburetors.

Home of Lancers and Thunderbolts



COMPLETION of the new \$6,000,000 addition to the pursuit aircraft plant of Republic Aviation Corp. in East Farmingdale, N. Y., and news that the first completed

plane has already rolled off the assembly line is announced.

Actual plane production started several weeks ago, while building mechanics were still at work on the new 500,000 sq. ft. structure.

This flag spells "America" in 25* different languages . . .

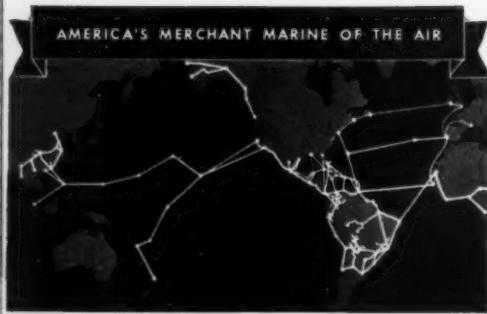


IN 63 FAR-FLUNG LANDS the house flag of the Flying Clipper Ships is a calling card that requires no translation. To countless thousands it is a familiar, friendly symbol for Uncle Sam.

In a sense it is also a calling card for the U. S. aviation industry. For the standards of performance and of service maintained by Pan American over 88,478 miles of routes are a reflection of this country's achievements in all branches of aviation.

This has had much to do with establishing among our neighbors a preference for U. S. planes and accessories, pointing to an important future outlet for our vast and expanding manufacturing facilities. The domestic airlines benefit substantially, too. For over their routes flows an ever-mounting volume of traffic on its way to or from Clipper "ports-of-the-air." Thus it is that in Pan American Airways, U. S. aviation has a "salesman" abroad.

*English, Spanish, Portuguese, Dutch, French, Chinese, Arabic, Gaelic, Hawaiian, Melanesian, Maori, Malay, Annamese, Burmese, Bengali, Shan, Tamil, Hindustani, Tagalog, Chamorro, Buan, Bantu, Eskimo, Alaskan Indian, South American Indian.



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Propeller Problems Confined, Clearing Up

DEFENSE officials expect the current propeller shortage to be cleared up in the next few months with the advent of new production facilities.

There is no mistake about existence of the shortage, or that it is being watched closely in Washington. The primary lack right now involves only the special types of propellers for newly designed combat ships.

Most press accounts of the condition have created wrong impressions by overplaying obvious facts and failing to explain the "why" of the problem.

The shortage centers around steel propellers, and is pointed directly at Curtiss-Wright Corp.'s Propeller Division, which, since the beginning of the defense program, has taken its place with Hamilton Standard Propellers Division of United Aircraft Corp. as one of the Big Two makers of blades for military combat ships.

Rated as Pioneer

Although a newcomer, Curtiss is already rated as a pioneer in the propeller manufacturing field, having developed the two special types—the four-blade type and the "hollow shaft" type—which are the cause of current publicity, in addition to reverse pitch operation and blade cuffs.

In excusing Curtiss of blame for delay in attaining top output, government officials point out that the concern entered the propeller field on a mass basis during a difficult period, tackled a tough problem in attempting high production of steel blades, and has encountered many difficulties with labor, procurement of machine tools, and training of green workers.

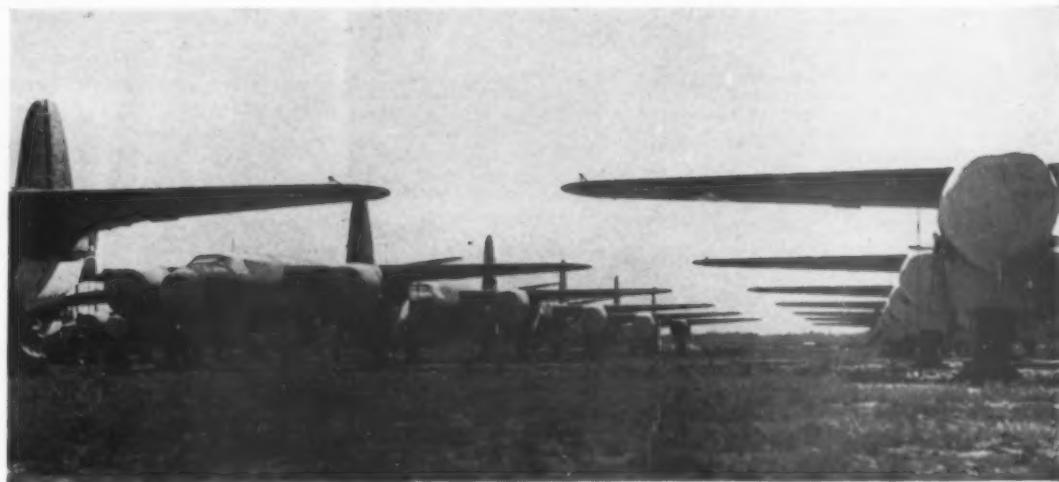
Curtiss is in production at its home plant at Caldwell, N. J., on the two special types now needed by three plane makers. Output of these types has gone along slower than on older standardized designs. Hence, the stacking up of Bell, Martin, and Republic warplanes.

Able to Increase

There have been no reports of a serious shortage in aluminum alloy props of the kind manufactured by Hamilton Standard. These types have been in production for a number of years—longer than steel blades—and the producers were better able to step up output to meet the defense need.

Newspapers have frequently published photos and accounts of accumulations of fighting craft near the plants of the three aircraft manufacturers because they lacked propellers.

But government and company spokesmen stress the point that not in every case did the planes lack



Propellerless B-26 Bombers at Martin
But reasons are many for planes stalled at plant airfields

propellers. Planes are not fitted with props until they are ready to fly. The lack of other parts may keep them on the ground, outside of assembly plants where they are open to the view of the public, newspapermen, photographers, and others who see only the absence of propellers.

A casual observer would not notice a missing instrument, it is pointed out.

Press Refuted

One newspaper story stated recently that at one time 245 Airacobras at Bell Aircraft Corp., Buffalo, were ready for delivery save for propellers and machine guns. It has been established since that at no one time have more than 40 Airacobras been held up by the propeller shortage.

The present propeller program will swing into high gear around Jan. 1, government officials say, because the Curtiss plants at Beaver, Pa., and Indianapolis will attain mass production tempo at that time.

In addition, Aeroproducts Division of General Motors Corp. will relieve pressure on Hamilton Standard and Curtiss shortly after Jan. 1 when its Dayton plant enters the exclusive circle with its own steel designs. Nash-Kelvinator Corp. will, before the first of the year, begin producing Hamilton Standards under license at a Lansing, Mich., plant.

American Propeller Corp. at Toledo is building its new plant, after many delays, and will further alleviate the shortage in time to meet new demands for blades.

In all present service types of Army and Navy aircraft, either Hamilton Standard constant speed or Hydromatic propellers with aluminum alloy blades are used, or Curtiss electric propellers with

either hollow steel or aluminum alloy blades.

One criticism of the government's propeller program is based on the reported preference of the British for duralumin blades on service ships.

The Britons are said to have made this preference known in the U. S., but, according to future output estimates, they will have to be satisfied with many steel blades. Advantages can be claimed by both proponents of aluminum alloy blades and of steel blades.

Another criticism heard—a "retractive" criticism, one might say—was the early reluctance on the part of U. S. military services to begin experimentation with wood propellers.

Both the Army and Navy are now casually interested in the possibilities of wood props on primary

training ships, but extensive use of the material will not be recommended for lighter planes at this late stage of the war effort.

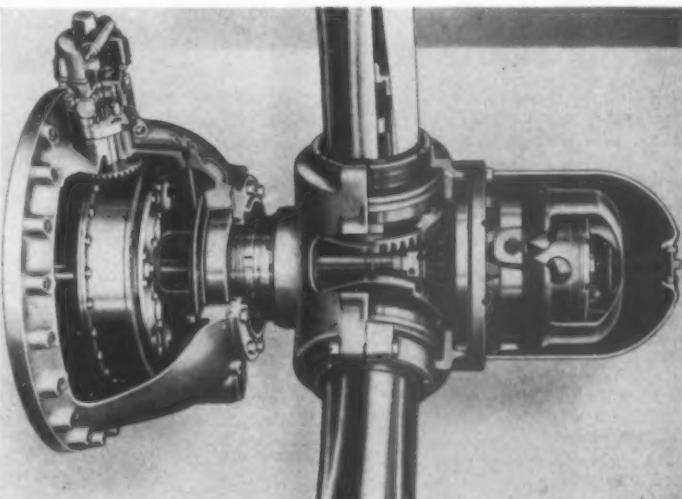
It has been suggested that, had development work on wood blades been carried on earlier, they might have replaced metal on training planes at this time.

The aluminum shortage hasn't yet hampered dural prop makers due to the fact that of the total aluminum supply, less than two per cent is reportedly demanded by the propeller industry.

Curtiss entered the field of mass production output only a short time before the present defense program began to assume staggering proportions.

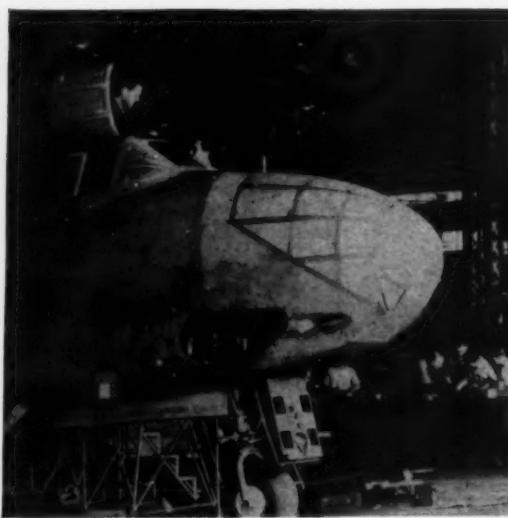
It was necessary to learn a great deal about methods in manufac-

(Continued on page 29)

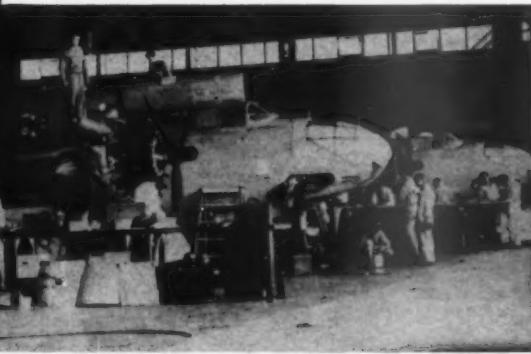


Hamilton Standard Hydromatic propeller and constant speed governor (cutaway view) installed on the nose section of a Pratt & Whitney engine.

Pooled Resources Speed Bomber Output



A VITAL phase of the industry's cooperative production effort is illustrated in the building of these Douglas Boston attack bombers at the Boeing plant in Seattle. Such pooling of resources by aircraft makers is saving months of time in the production of warplanes of tested and proven design.



Auto Leaders Plan for Aircraft

(Continued from page 19)

before May. Output of 1,000 units monthly is expected late in 1943.

Chevrolet: 1,200-hp. P&W R-1830 for B-24. Buildings in Buffalo area now being converted to aircraft engine production. Little equipment installed. Initial production scheduled for next July; 350 units monthly by January 1943; 1,000 monthly by July 1943.

Supply Adequate

OPM believes that with the new capacity to be put in operation shortly by automobile firms, engine output in 1942 and 1943 will be sufficient to supply the needs of the new Midwest bomber assembly plants as well as the Boeing-Vega-Douglas Flying Fortress pool.

Roughly, Buick, Ford, Chevrolet, Packard and Studebaker plan to be producing around 7,000,000 hp. monthly by July 1943, compared to 8,000,000 hp. by Pratt & Whitney, Wright and Allison.

Chrysler and Continental are both reported well along on 2,000-hp. models and Ford, while turning out P&Ws, is going ahead with its own liquid cooled unit.

Ford has already announced plants to begin construction of at least 10 B-24 assemblies before its \$47,000,000 assembly unit at Ypsilanti, Mich., is completed. In the 3,700,000 sq. ft. aircraft factory—largest in the world—Ford plans to turn out its first complete B-24 in May, and the first two sets of sub-assemblies for the government's new Tulsa and Ft. Worth assembly units in June. From then on, the company will work toward a goal of 130 subassemblies monthly—65 to be sent to Tulsa and 65 to Ft. Worth—as well as 75 planes to be fully assembled at Ypsilanti.

By spring, parts for Martin B-26 medium bombers to be assembled at Omaha will be coming from Chrysler and Hudson in large quantities, while subassemblies for North American B-25 medium

bombers to be assembled at Kansas City will be flowing from Fisher Body. Each medium bomber plant, when operating at peak capacity, will require parts for 100 planes a month.

In the Flying Fortress pool, two automobile body builders will soon be supplying large quantities of parts and subassemblies. Murray Corp. will ship all outer wings and nacelles to Douglas and Vega, while Briggs will produce landing flaps, bomb-bay doors, tank covers and supercharger ducts for all three companies in the pool.

But even as the automobile industry began to take its place in the aircraft program, its speed, or lack of it, received sharp criticism from UAW-CIO labor leaders. The UAW officials charged recently before a House investigating committee that the changeover from passenger car to aircraft production had been slow because automobile firms had been reluctant to convert production capacity which might interfere with civilian output.

Defend Reuther Plan

Still maintaining that the Reuther plan—under which automotive firms in six months' time would be turning out 500 planes daily by the "simple" expedient of employing unused capacity—should have been adopted, the UAW officials said that automobile manufacturers last fall should have immediately turned their existing facilities into aircraft output.

Most caustic comment came from R. J. Thomas, president of the UAW-CIO, who declared: "These new plants will doubtless be highly-efficient plants, capable of asserting dominance in the aircraft industry following completion of our defense program. They are more valuable to their present owners than a regular automobile factory toolled for defense production on an emergency basis. Such factories might

FIRST contract awarded to the Nashville Division of Vultee Aircraft Inc. for the Vultee Vigilant (O-49) liaison observation plane, has been completed, five months after the new plant was dedicated.

The O-49 will be followed immediately by the slightly modified O-49-A, the first of which are already making their way down the Nashville final assembly line.

A few days later, a fleet of 123 new Vultee basic training planes took off from the company's factory field at Downey, Cal., for delivery to the Army and Navy.

Fifty of the craft were consigned to San Diego for assignment to naval training stations at Pensacola, Corpus Christi and elsewhere. The remaining 73 are to go to Army bases at Moffett Field, Cal.; Guther Field, Ala., and Randolph Field, Tex.

not be able to meet peacetime aircraft competition."

To this the automobile manufacturers replied that a changeover last fall would have been impossible because less than 15% of the machine tools on hand at the time could have been used for aircraft; that use of existing plants would have required almost complete renovation, throwing thousands of workers out of jobs when they were not likely to find other defense employment. They pointed out, moreover, that the new plants being constructed for aircraft output are usually not theirs but the government's, although in most cases they have the option of buying them later on.

OPM is in almost complete agreement with the viewpoint of the automobile manufacturers, asserting that even if the automotive concerns had gotten into volume production on parts and engines six months ago, "which would have been impossible," there would have been no adequate means of assembling the complete plane.

Douglas Dedicates, Expands

DOUGLAS Aircraft Co. last month dedicated its new \$12,000,000 blackout plant at Long Beach, Cal., and at the same time started a \$13,000,000 expansion program which will double its size.

In production for several months on parts and assemblies, the 1,400,000 sq. ft. unit now employs over 7,000 workers, a figure which will rise to 30,000 when the new addition is completed and increase total floor area to 2,750,000 sq. ft.

Beech Increases Wages

Beech Aircraft Corp., Wichita, Kan., announced last month that the combination of pay increase effective Oct. 13 at the time of the regular four-month reclassification period and a 2½ production bonus granted hourly-paid workers Oct. 20 equals a 7½ raise in the firm's average wage rate.

Company Sidelights

Vultee Completes 1st Contract for O-49s at Nashville Division

North American Backlog Nears 400 Million Mark

North American Aviation Inc. in mid-October reported that as of Sept. 1:

In Inglewood, Cal., 11,633 employees were working on a backlog of \$158,382,940 in a production area of 1,054,000 sq. ft. On Sept. 15, 12,111 persons were employed in the plant.

In Dallas, Tex., 3,510 employees were working on a backlog of \$103,515,411 in a production area of 1,022,400 sq. ft. On Sept. 15, 3,902 persons were employed in the plant.

In Kansas City, Kan., the backlog was \$127,440,000. Production area is 1,216,725 sq. ft.

Monthly payroll for all three plants was approximately \$2,475,000. Backlog for all three plants was \$389,338,351, a new all-time high.

Company officials estimate that 30% of North American's manufacturing and assembly job is now being farmed out to 65 large and small subcontractors. In addition, 800 deals directly with more than 800 parts and material suppliers in 35 states.

Only 15% of NA's manufacturing was handled outside its own shops six months ago.

Consair Reports Huge One-Day Deliveries

In one day recently, Consolidated Aircraft Corp., San Diego, Cal., turned over \$1,761,634 worth of Pratt & Whitney powered heavy bombers and flying boats to its customers.

This was the largest one-day output in the 18-year history of Consolidated, and company officials believed it to be a record for firms engaged in the construction of this type of aircraft.



THE
Lockheed
LOG

LEADERSHIP



ALL FIRST CLASS MAIL
By AIR
IT'S COMING!

IN PRODUCTION!

Figures available for the first half of 1941 show:

THE GREATEST DOLLAR VOLUME

LOCKHEED produced the greatest dollar volume of planes in American aviation industry.

MORE 2-ENGINE AIRPLANES

LOCKHEED produced more two-engine aircraft than any other American manufacturer...Hudson Bombers...Lightning P-38 Interceptors and Transports.

MORE CRAFTSMEN ON PAYROLL

TODAY...Lockheed and Vega employ more craftsmen than any other organization engaged in airplane construction.

All the aircraft factories of America are working 'round the clock to meet the ever-increasing demands for more bombers, more transports and more fighters. And in this production, Lockheed leads the industry!

Because Lockheed design is sound...so sound that standard commercial airplanes like the Lockheed 14 Transport and the Lodestar become Hudson and Ventura Bombers without major structural changes...many bottlenecks of

testing and retooling that have in the past hampered mass production have been by-passed.

On these leadership-making designs, Lockheed aircraftsmen work in a streamlined-for-speed plant...a plant that has been designed for future as well as present production.

Thus Lockheed has been able to establish leadership in production of aircraft that lead as well in stamina, performance, reliability and public acceptance.

LOOK TO *Lockheed* FOR LEADERSHIP

LOCKHEED AIRCRAFT CORPORATION • BURBANK, CALIFORNIA, U.S.A.

Printed in U.S.A.



THIS is no time to waste time!" is a theme recently adopted by the Air Transport Association to impress on the public the time-saving importance of flying. And who can tell for how long *speed*—of transport and production—may be vital to America's stake in civilization?

Fortunately, United States air lines are today the best in the world. They have made great strides in speed, safety and comfort. Air line passenger traffic has increased 300% in five years—totalling 2,727,820 in 1940. And, since 1929, fares per mile have been cut in half.

Defense, to which the air lines have contributed greatly, has necessarily slowed the progress of air transport. Neverthe-

less, planes are now in development which will carry more than 60 passengers each, and cruise with unprecedented fuel economy at speeds of approximately 300 miles per hour. They will fly regular schedules of 8½ hours between Los Angeles and New York.

"These planes," says President Jack Frye of TWA, "will give the United States leadership for years to come in air transport equipment.

And lower costs, plus increasing demand for time-saving travel speed, will mean continued substantial development for the industry."

Ambitious, technically trained men will be needed, more than ever, for the operation and maintenance of the air lines.



ACADEMY OF AERONAUTICS, LaGuardia Field, New York
CASEY JONES SCHOOL OF AERONAUTICS, Newark, N. J.

COMPLETE TECHNICAL COURSES IN AERONAUTICS

C. S. Jones
President

Propeller Problem

(Continued from page 23)

ing hollow steel prop blades, the type Curtiss concentrated on, due principally to the difference in the construction of the blades, as compared with aluminum blades, and to the difference in materials. Too, rejections were numerous during the first days of attempted mass output of steel blades.

During the primary stage of development of the Curtiss type of prop, quantities were too small to warrant the procuring of elaborate machinery for the manufacture of parts. Therefore, the majority of these parts were manufactured by job shop methods which were lengthy and expensive.

Another retarding influence in the effort to boost output was a lingering labor strike at the Caldwell plant; later, a jurisdictional dispute among electrical unions at the division's nearly completed Beaver unit.

Another hurdle in the race for mass output of steel props was the problem of obtaining supervisory, as well as general personnel, since the accuracy and finish requirements on propeller parts are said to be far superior to requirements in almost any other line of manufacture, with the possible exception of aircraft parts, instruments, or high precision tools.

Own Training Program

Because the supply of available skilled help was not sufficient for the requirements of the expanding division, the company was forced to develop its own training program, and this has been in effect since Aug. 1940.

Defense officials, through the OPM, have endeavored to facilitate construction and equipping of Curtiss-Wright's new plants, as well as those of other propeller companies, by giving increasing attention to the trouble concerning machine tool priorities, labor disputes, and the training of raw workers.

In the case of the "hollow shaft" propeller, Curtiss is the only manufacturer at present turning out this type. The hollow shaft enables an aircraft cannon to be fired through the center of the prop. This was accomplished for the Army Air Corps' Airacobra by Curtiss engineers.

New Steel Prop

The Aeroproducts Division of General Motors is said to be developing a steel propeller with a hollow hub and self-contained hydraulic unit which may be offered for service on the Airacobra, supplementing the use of the Curtiss design.

Four-blade propellers, permitting efficient use of 1,850-2,200-hp. engines are in production for the Martin B-26 medium bomber and the Republic P-47 Thunderbolt interceptor.

Three-blade props are universally used on both British and German tactical types at present although some experts believe, with increasing altitude performance requirements and higher engine horsepower, it will be only a short time before four-blade props are in general use.

Sea Traditions Observed

Glenn L. Martin Co., which expects to fly its XPB2M-1, world's largest flying boat, this month, reports that life aboard the plane will be similar in many ways to that on a surface warship.

"The old Navy traditions will be kept aboard the XPB2M-1," the Martin company declares. "There will be two messes—one for officers, another for enlisted men. And there will be two showerbaths, one forward and one aft, where the crew may make its ablutions while cruising miles above the ocean."

So spacious is the ship that the captain will not only have his private desk on the bridge, or flight deck, but will have a private stateroom as well.

Minimum Wage Set for Parts Producers

THE Secretary of Labor ruled last month that manufacturers of aircraft engine and propeller parts, accessories and equipment will henceforth be subject to the same minimum wage requirements as the aircraft, engine and propeller companies themselves.

The ruling is not expected to have any disturbing effect on labor relations of the firms involved or to increase payroll totals since the 50c an hour minimum level is already observed widely throughout these branches of the industry.

No subcontractors come within the jurisdiction of the ruling as they are not subject to the Walsh-Healey Act under provisions of which the minimum wage program falls. The aircraft industry, unlike most others, has no substitute manufacturers category.

Large Engine and Plane Contracts Awarded to Studebaker, Republic

TWO War Dept. awards aggregating \$138,000,000 topped government aircraft contracts during the past few weeks with Studebaker Corp. receiving a \$74,338,783 order for Wright engines and Republic Aviation Corp. a \$64,404,036 order for airplanes and spare parts.

The Studebaker contract, believed to cover 1,200-hp. R-1820 Cyclones for use in Flying Fortresses, is the second publicly-announced award made to Studebaker, the firm having received a \$33,567,580 order for Wright engines in January.

The Republic award, along with a smaller \$3,130,349 contract for maintenance parts announced the same day, brought that company's backlog above \$130,000,000.

Other Awards

Other large orders revealed by the War Dept. recently include:

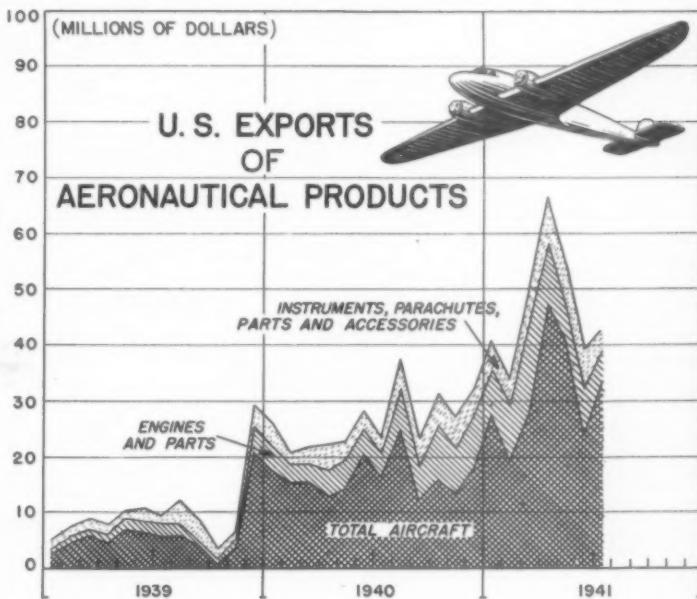
AEROPRODUCTS Division, General Motors Corp., Dayton, O., \$8,099,595. propeller assemblies.

ROHM & HAAS Co., Philadelphia, Pa., \$987,360, plastic sheets.

RYAN AERONAUTICAL Co., San Diego, Cal., \$103,000, airplanes.

AIRCRAFT ACCESSORIES Corp.,

Aero Exports Rise 21% in August With Peak Shipment of 1,071 Engines



AERONAUTICAL products valued at \$52,331,213, or about 35% of the total estimated production, were exported by the U. S. in August, the Dept. of Commerce reports.

While this represents a more than 21% increase in shipments over July, the ratio of exports to total production during August was well below the first seven months when approximately 44% of U. S. aviation production was exported.

August exports lift the total worth of aviation shipments this year to \$379,071,608, an increase of 91% over the same period last year.

Standards Group Meets Nov. 10-13

STANDARDIZATION methods vital to mass production and to field servicing and maintenance of military craft will be discussed by the National Aircraft Standards Committee at its national meeting to be held in New York City at the Lexington Hotel, Nov. 10-13.

The committee, comprising representatives of all major aircraft manufacturing companies, has, in less than a year of existence, achieved standardization throughout the industry on 21 items which go into airplanes and shortly will announce standardization on six more.

Headed by William M. Smith of Bell Aircraft Corp., the NASC comprises an eastern division under the chairmanship of J. T. Thompson of the Glenn L. Martin Co.; a western division headed by F. M. Salisbury of Douglas Aircraft Co., and a six-man executive board.

The Aeronautical Chamber of Commerce, through J. T. Gray, technical department manager, executes much of the administrative work of the committee.

Charter Operators Protest Proposed CAA Regulations

Criticism is Result of Misunderstanding, Administration Says

By ERIC BRAMLEY

A STORM of protest has arisen over proposed amendments to the Civil Air Regulations under which charter operators would be required to hold non-scheduled air carrier certificates, which dictate rules of operation.

The regulations, which initially would affect some 5,000 operators, both large and small, were circulated by the Civil Aeronautics Administration last month for comment.

The proposed amendments, together with comments received by CAA, now go to the Civil Aeronautics Board. What action the Board will take—whether it will hold a hearing to allow operators to express their views more fully—had not been decided when this article was written.

Up to now, charter operators, from sight-seeing outfits to services which will fly passengers anywhere on a non-scheduled basis, have not been subject to a definite set of rules. They are, of course, regulated in the sense that they must abide by all the provisions of the Civil Air Regulations, as must all pilots in the U. S.

Typical of the impression which the proposed amendments have made upon the industry was a resolution adopted by the National Association of State Aviation Officials at its recent Providence, R. I., convention, opposing any requirements at this time wherein charter operators might be required to provide themselves with multi-motored equipment in order to continue their operations.

Answering these criticisms for the first time in statements to AMERICAN AVIATION, CAA officials emphasize that the proposals will not throttle the operators, will not increase their expenses, and will not encumber them with regulations. In many cases, operators will have no more regulations than they now have, it was pointed out.

Criticism received, is due to a complete misunderstanding of what the regulations would do, according to CAA officials who admit that much of this misunderstanding is their own fault, for circulating the proposals without adequate explanation.

Proposed Regulations for Charter Operators

The proposed regulations, which cover 21 pages, provide, in part, as follows:

1. A non-scheduled air carrier operating certificate would be issued for both passengers and cargo, cargo only, or passengers only.

2. The certificate would authorize any or all of the following operations: visual contact day-land, visual contact day-water, visual contact night-land, visual contact night-water, instrument day-land, instrument day-water, instrument night-land, and instrument night-water.

3. The area over which the carrier operates shall be of such general character and equipped with such aids to air navigation as the Administrator may deem necessary to assure safe operation of the type conducted by the carrier.

4. Aircraft shall be certificated for the type of operation conducted by the carrier in accordance with the applicable provisions of Part 04 of the CAR and shall be of a model and quantity deemed necessary by the Administrator for safe operation.

5. Pilots shall have at least commercial pilot certificates, and the carrier shall have available properly certificated and rated mechanics and other necessary airmen and technical employees, all of whom shall be of a kind, grade, experience and number as the Administrator may deem necessary for safe operation.

6. All airports used by the carrier in air transportation shall be approved by the Administrator.

7. The aircraft of the carrier shall be equipped with such radio facilities (two-way radio telephone, radio compasses, radio direction finders, etc.) and the carrier shall possess such radio facilities on the ground as the Administrator may deem necessary for safe operation.

8. Single-engine aircraft of less

than 100-hp. shall not be used in any flight which will extend to a point more than 500 miles from the base of the carrier.

9. Single-engine aircraft, carrying passengers, shall not be operated at night beyond 25 miles from the base of the carrier unless each occupant of the aircraft is equipped with a parachute and such operation is confined to a lighted airway, or the flight path of the aircraft is such that it will be at all times within 25 miles of a suitably lighted airport.

10. Single-engine aircraft shall not be operated under instrument conditions unless each occupant is equipped with a parachute.

11. No carrier shall operate multi-engine equipment unless the plane can maintain level flight with one engine inoperative at least 1,000 ft. above the highest obstruction on the routes flown in the area.

12. Multi-engine aircraft shall not be operated under instrument conditions off an airway unless such planes are equipped with fully functioning dual controls operated by two properly certificated pilots.

13. A carrier cannot operate a plane beyond 500 miles from his base, or over water more than 25 miles from shore, unless the plane is equipped with two-way radio telephone.

14. The first or second pilot of a carrier operating more than 500 miles from his base shall not fly more than 80 hours a month in "air transportation," nor more than 100 hours a month total.

Pilots and Planes Increase
Certificated pilots in the U. S. totaled 91,442 on Oct. 1, or 10% more than the 44,000 licensed pilots on record with the CAA at the same time last year. Certificated civil aircraft increased 55% in the same period, from 15,200 to 23,400.

15. No carrier shall begin a flight under instrument conditions unless the flight plan prescribed in the CAR has been filed.

A careful reading of the regulations shows that many sections have qualifying clauses. For instance, in prescribing the area in which a carrier may operate, CAA will consider character of terrain, type of aircraft used, adequacy of airports, type of operation conducted, aids to air navigation, prevailing weather conditions, and other factors.

Qualifications Important

These qualifications, it is emphasized, are important. They would, for instance, enable CAA to issue a certificate to an operator hopping passengers around an airport with no more restriction than he now has. The same would apply under many conditions to operations within the 500-mile radius. For visual contact, night or instrument flight, the regulation would be the same except that single-engine planes must furnish parachutes when on instruments and must have direction finders when off the airways.

Whether or not an operator must fly within the 500-mile radius will to a great extent depend on his equipment—horsepower, whether it can get into all fields, etc. If he can meet the requirements, which CAA believes are essential to safety, he can be certificated to operate anywhere in the U. S. Thus, fears such as those expressed by NASAO, are unfounded, it is felt.

Conditions imposed on flights of more than 500 miles from base will make operators conform more to airline standards, CAA says, again emphasizing, however, that multi-engine equipment is not necessarily required.

Airports Explained

Concerning the provision that all airports must be approved by the Administrator, officials state that this merely means that the Administrator will say, for example, that a Cub cannot use a field with a runway less than — ft., that a Stinson must have a — ft. runway, etc. It does not mean that carriers will be handed a list of airports approved by the Administrator and told that they cannot use any others.

CAA has been criticized for proposing parachutes on single-engine equipment under certain conditions. Its answer is that there is always the possibility of engine failure, which might prove fatal at night or on instruments, and parachutes would in some measure compensate for this. Criticism on the 500-mile radius is answered with the statement that the figure is arbitrary—a limit had to be set somewhere. Experience may prove it to be wrong.

Accusation that the airlines proposed the regulations to enable them to monopolize traffic is without foundation—the airlines had nothing to do with the regulations, CAA says.

(Continued on page 33)

Answer to Bottlenecks?



This new two-engined lightplane is described by the manufacturer, Langley Aviation Corp., of New York City, as the "answer to defense bottlenecks." Built from blueprints by Martin Jensen, veteran pilot and designer, the Langley ship is made entirely from molded plastic plywood. The manufacturer claims it can be readily placed in quantity production and does not

demand any of the scarce raw materials used in other aircraft.

The Langley is designed for "private, commercial or military use," is a four-place craft with two standard 65 hp. engines, has a maximum speed of 142 mph., cruising speed of 125 mph., lands at 46 mph. The firm is constructing a ship which will use two 90 hp. engines.

P-47 B Republic
Thunderbolt for
the U. S. Army



F4U-1 Vought Corsair
shipboard fighter for
the U. S. Navy

PROPELLERS for the *fastest*

Two of the world's fastest fighting planes now in quantity production are the Army Thunderbolt pursuit and the Navy Corsair fighter. » » » Like thousands of other combat and advanced training planes, these latest types will be equipped with Hamilton Standard Hydromatic propellers.

HAMILTON STANDARD PROPELLERS
ONE OF THE THREE DIVISIONS OF
UNITED AIRCRAFT CORPORATION
EAST HARTFORD, CONNECTICUT

From State to State

States Take Lead Over U. S. in Regulating Civil Aviation

SEVERAL states, under the impetus of the national defense program, are outstepping the federal government by initiating regulatory measures aimed at the close control of all civil aviation activities within their boundaries.

While Washington officials discuss such proposals as federal certification of all landing fields, uniform airport traffic rules, close supervision over airport managers, and the fingerprinting of aviation personnel for identification purposes:

New Hampshire already requires the registration of landing areas and is now considering the adoption of uniform traffic rules for all airports in the state;

Massachusetts closely supervises airport manager appointments and, through a new order, checks up on the movements of all civil pilots in and out of every airport;

Michigan fingerprints and issues identification badges to all persons working around regular airports of the state;

Minnesota promotes a flight education program featuring gliding and soaring for youths of high school age.

These are but a few of the aviation activities recently initiated by the states. Various programs of a similar nature are in the making.

That the various states in the past have been ahead of the federal government in certain phases of regulating civil aviation activities was demonstrated only last month when the CAB ordered the certification of all civilian pilots and planes in the U. S., starting Dec. 1.

At the time the new federal regulation was passed, 33 states already required their pilots to hold federal certificates and 32 states required similar certificates for planes.

Since a number of current state programs have been considered by federal officials in formulating a plan to organize private pilots and planes into a civilian air defense system, a close glimpse at several states suggests several features, which might appear later in the federal plan.

N. H. Registers Fields, Studies Traffic Rules

WITH AN AVIATION policy designed "to supplement and assist the work of the federal regulatory agency," New Hampshire for some time has extended the federal jurisdiction over aviation beyond the civil airways to the entire state by requiring all pilots to hold federal certificates.

Through an existing law requiring all regular landing areas to be registered with the state Aeronautics Commission, the adoption of uniform field traffic rules is now pro-

posed as an important requisite for issuance of airport certificates. Thus the state-wide adoption of uniform field traffic rules can readily be enforced, the Commission declares, pointing out that this would not be inconsistent with federal regulations because approval of local field traffic rules by the CAA is required.

In addition to establishing uniform procedures at the various airports, the field rules would include the designation of practice areas in which all training maneuvers would be practiced. These areas, in so far as possible, would be selected off the main traveled routes and would be useful also for emergency landings.

Establishment of these practice areas to which all flying, except point-to-point operations, would be confined, would relieve congestion in the vicinity of airports and would assist in the control of flying activities over places of strategic importance.

Massachusetts Checks Movements of Pilots

UNDER A NEW state regulation, the Massachusetts Aeronautics Commission requires all pilots of civil aircraft flying cross-country to report to the airport manager or his representative before taking off from or after landing at any approved airport in the state. Such information given by the pilot, including the license number of aircraft, the point of departure and intended destination, must be kept on file by the airport manager for two years, together with similar data for local flights.

"This registration of pilots in and out of an airport," John Lasell, director of the Commission, explains, "is an attempt on our part to voluntarily police civilian flying, thereby trying to remove the possibility of either the CAA or military from clamping down on civilian flying."

Close control over civil aviation is further exercised by Massachusetts through the licensing of airport managers, who must pass an examination based upon aeronautical statutes and regulations of the state and who are responsible for reporting all infractions to the Commission. The manager must designate a licensed airmen to act in his place whenever he is absent from the airport.

Michigan Recommends Fingerprinting, Badges



Identification Badge

Required at Michigan Airports

Finger-printing and issuance of identification badges to all workers having access to regular airports (including airline employees, airway traffic controllers and CAA inspectors) feature a regulatory program sponsored by the Michigan Dept. of Aeronautics, and recommended by Acting Director S. B. Steers for extension throughout the country.

While the project is under the supervision of the state aeronautics board, the actual photographing, finger-printing and distribution of badges are carried on by the various airport operators, assisted by the Michigan State Police.

Prior to the issuance of an identification card and badge, each applicant must fill in two cards showing samples of his fingerprints and other basic personal information. One card is sent to the Michigan State Police for checking, and the other to the Federal Bureau of Investigation. Both of these agencies then send whatever information they might have on the applicant to the Michigan Dept. of Aeronautics.

Minnesota Promotes Gliding for Youth

With an initial allocation of \$1,000, Minnesota has started a program to promote gliding and soaring among youths between the ages of 16 and 18 years, to give them, in the words of State Aeronautics Commissioner Maurice N. Walsh, "a foundation in aerodynamics and meteorology, and prepare them for later power-plane flying."

Dr. Walsh reports that the National Youth Administration has promised aid in the construction of glider ports, hangars and the machines themselves, and that a full-time director of gliding activities for Minnesota is now being sought.

The immediate plan provides for the establishing of two schools for primary instruction, one near the Twin Cities—probably on the Minnesota University Airport, and the other near Rochester.

"It is our hope," Dr. Walsh states, "that the finances already available will be augmented if the McCarran bill finally passes Congress."

NASAO Fights Airport Plan

The proposed plan for federal certification of all airports and landing areas (described in *American Aviation*, Oct. 15) is being firmly opposed by the National Association of State Aviation Officials.

At this writing, NASAO is preparing a formal protest against the measure, according to word received from Asa Rountree, newly elected president of the association.

New Safety Record for Pilot Training

Reported by CPTP

A NEW safety record for pilot training was established by CPTP during the past summer session when, according to CAA figures, 16,194,000 miles were flown for each fatality compared with 8,252,000 miles per fatality in the preceding three-month period, Feb. 15-May 15.

In the entire pilot training program prior to last Feb. 15, the figure was 4,500,000 miles for each fatality, with an overall figure of 6,400,000 miles per death since the beginning of CPTP in the spring of 1939.

Comparison of safety records of the 1941 spring and summer sessions indicates that with 27,750 trainees in the spring courses which ended in June, there were six accidents involving fatalities, a ratio of one to 4,625 students. In the summer course, with 16,018 enrolled, there were only two fatal accidents, a ratio of one to 8,009 students. There were 436 accidents of all types in the spring program and 68 in the summer course.

Uniform Airport Procedures Proposed

Adoption of standard airport traffic control procedures, including uniform field traffic rules, has been recommended by the Civil Aeronautics Board.

The procedures recommended are the same as those in the "Manual of Operations" prepared by the CAA's air traffic control division and to be placed in effect at the 39 airport control towers which the CAA is taking over starting this month. The standard practices could be extended to all airport control towers, whether operated by the CAA or not, through a CAB regulation requiring all airport traffic control tower personnel to observe them. This could readily be done, since all airport control tower operators are certificated by the CAA and thus bound to conform to regulations passed by the CAB.

If the standard procedures are adopted by the CAB, they would supersede any local traffic rules which might conflict.

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WPA Reports Building New Runways Totaling 500 Miles in Six Years

SINCE inception of the Works Projects Administration in July 1935, through the end of the last fiscal year, WPA workers have constructed a total of nearly 500 miles of new airport runways—more than enough to be stretched into a 20-foot highway spanning the continent from New York to San Francisco, according to figures released by WPA Commissioner Howard O. Hunter.

The report shows construction of new runways totaling 2,604,000 feet, reconstruction or improvement on runways aggregating 522,000 feet, plus runway surfacing of 283,000 feet.

Other highlights of the six-year report show that 222 new landing fields were built, with improvements made on 360 others and additions built for 68 more. A total of 886 new airport buildings, including 195 hangars, were erected and 1,624 reconstructed or improved.

Florida led all states in WPA new aviation projects: in the number of new airport buildings with 282, in the number of new landing fields with 35, and in the aggregate length of new runways with 193,100 feet. Michigan ranked second in number of new landing fields constructed by WPA, having 17, while California was second in construction of new airport runways with 165,400 feet, and second in number of new airport buildings with 105.

Commenting on the WPA aviation program, Hunter pointed out that, "In the years from 1935 to 1939, particularly, when regular appropriations for the armed forces were so meager, it was the WPA worker who saved hundreds of Army posts and Naval stations from literal obsolescence and who built or enlarged scores of the airports which today are vital links in our network of aerial defense."

Tribute to the part WPA has played in aviation development work was reportedly given recently by Carleton Putnam, president of Chicago & Southern Air Lines, upon completion of the new office building and hangar by WPA workers at the Memphis Municipal Airport.

For Science— A 29,000-Ft Fall

Continuing experiments for scientists of the University of Chicago and Northwestern University, Arthur Starnes on Oct. 24 leaped from a plane at 30,500 ft. and tumbled to 1,500 feet before opening his parachute. Dr. A. C. Ivy of Northwestern University Medical School, who directed Starnes training for the experimental jumps, said the delayed parachute opening from the extreme height was intended to prove that a man can remain conscious while falling through space. The jumper's weight was 275 lbs., including scientific equipment he carried.

Science Measures Reactions to Parachute Jumps

SCIENTIFIC experiments with dummies and with a human subject testify to the fleeting mental "black-out" occurring shortly after the jerk of the riser straps caused by a parachute opening . . . the difficulty in hearing is the same as that experienced when facing, or with the back to a high wind . . . there is no feeling of nausea and no sensation of floating in space when jumping with the eyes closed.

been a faultily packed 'chute in the history of the Maxwell department.

The Army requires that each 'chute be drop tested at least once every two years for the first four years, and once yearly for the following three years. After that the lifesavers are no longer used by flying personnel, since the life of a parachute is limited to seven years. 'Chutes over seven years of age are used, however, for dropping



These experiments and others, prompted by new attention to mass parachute jumps by Army 'chutists, also have determined that except in flights as fast as would be experienced in a jump from a descending dive bomber, there is no appreciable unfavorable influence on heart rate and blood pressure. Vision is not impaired when goggles are worn; the eyes water without goggles.

Dummies play a big part in experiments and in routine parachute drop testing at Army bases. Work of the parachute department at Maxwell Field, headquarters of the Southeast Air Corps Training Center, which drops between 20 to 30 'chutes a month as a precaution against faulty packing or damaged 'chutes, is shown in the accompanying photo as two figures drop from beneath an A-17. It's only a precaution, however, for there hasn't

inanimate objects such as food and medicine parcels, light guns and the like.

The dummies, weighing approximately 150 pounds, are dropped from the external bomb racks of the test ship at 100 mph.

The 24-foot (diameter) parachute, is designed for men weighing up to 180 pounds, and the 28-foot 'chute for men weighing over 180 pounds. In dummy practice, however, the total weight of the parachute and dummy must not exceed 200 pounds.

Each parachute has a service record, complete with serial number, and every time it is used, or tested, or repacked, an entry to that effect is made on the record.

How often do they fail to open? The men at Maxwell say they can't remember even hearing of a 'chute not opening—not if it's packed correctly. And they see that their 'chutes are packed correctly.

Charter Operators

(Continued from page 30)

CAA differs with statements that charter operators don't need to be regulated. Some regulation is not only necessary for safety but is required under the Civil Aeronautics Act, officials claim, adding that both CAA and CAB have been criticized for not fulfilling the requirements of the law sooner. Although the regulations were not directly occasioned by national defense, they undoubtedly will give CAA a better check on operators.

Another comment has been that there are too many generalities in the regulations. These same officials point out that leaving many matters up to the Administrator will help rather than harm the operators.

There is a possibility that all types of operators may not need

certificates, it is explained, because the highly complex question of what constitutes a "common carrier" is involved. In very general terms, it is said that an operator would require a certificate if he advertised his service, posted his rates, and carried all traffic offered. If his business was on a personal basis, involving dickering with a passenger as to the fare, etc., he might not need one. However, because an operator might be a common carrier in one transaction and not in another, CAA emphasizes that all should secure the certificates, if the proposal is adopted.

To secure a certificate, an operator would file written application with CAA. After an investigation as to the applicant's qualifications, the certificate would be issued. CAA does not contemplate that it would need additional personnel for the job.

CAA Gets First Control Towers

THE CIVIL Aeronautics Administration this month is taking over the operation of air traffic control towers at an initial group of eight fields serving military and civil aviation, Glen A. Gilbert, acting chief of the CAA's air traffic control division, reports.

Included in the first group are control towers at Albuquerque, N. M.; Atlanta, Ga.; Charlotte, N. C.; Floyd Bennett Field, N. Y.; Orlando, Fla.; Portland, Ore.; Salt Lake City, Utah, and Savannah, Ga.

Under present plans, the CAA will take over control towers at a second group of 19 airports in January, and at 12 more fields next April.

The January group includes Augusta, Ga.; Bangor, Me.; Boise, Idaho; Detroit (Wayne County), Mich.; Everett (Paine Field), Wash.; Jackson, Miss.; Jacksonville, Fla.; Las Vegas, Nev.; Long Beach, Cal.; Los Angeles (Mines Field), Cal.; Louisville, Ky.; Manchester, N. H.; Meridian, Miss.; Nashville, Tenn.; New Orleans, La.; Oklahoma City, Okla.; Pendleton, Ore.; Tucson, Ariz., and West Palm Beach, Fla.

In the April group are East Baton Rouge, La.; Ft. Wayne, Ind.; Fresno, Cal.; Houlton, Me.; Lake Charles, La.; Little Rock, Ark.; Midland, Tex.; Presque Isle, Me.; Salinas, Cal.; Tallahassee, Fla.; Tulsa, Okla., and Wichita Falls, Tex.

Many additional points are expected to be added to this initial list of 39 airports as traffic trouble spots are created by increasing military and civil flight activities. Present funds provide only for the federal operation of these 39, so a supplemental appropriation would be needed to cover any other control towers that are in the future recommended by the Army and Navy for CAA operation.

Is He the Youngest Aviation Instructor?

Henry M. Carruthers, Jr., thought to be the world's youngest aviation



Carruthers

instructor at slightly more than 18, went to work recently teaching CPTP students at Embry-Riddle School of Aviation, Miami, Fla. "Bud" as he is known, was ready to solo last summer when he reached the lawful age. Since then he's been working for a commercial and instructor's license. Now his old instructor is on vacation and "Bud" is taking over his students. He hopes to be assigned to the new Riddle-McKay Aero College, which opened at Clewiston, Fla., in August to teach RAF fledglings.

FLYING FORTRESS WINS HIGH PRAISE FROM R.A.F. PILOTS

American-Built Boeing Bombers
Daylight Raids



...and Now BOEING BUILDS THE NEW B-17E FLYING FORTRESS!



Says an R.A.F. pilot: "These Fortresses are wonderful aircraft—perfectly maneuverable, steady as a battleship and incredibly efficient." In unprecedented high altitude raids over enemy territory, Great Britain is demonstrating the remarkable striking power of Boeing Flying Fortresses.* And from this wartime experience has come new knowledge that enables Boeing to produce for the U. S. Air Corps still mightier weapons—the big B-17E's—newest of the famed 4-engine Flying Fortress series. Today, for the defense of America, vast aircraft manufacturing resources are being mobilized for cooperative mass production of these new-type Boeing Flying Fortresses.

*Registered Boeing trademark.

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Seattle, Washington
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Vancouver, B. C.

Latest Traffic Control Device

First Automatic Flight Board Now in Use

Teleregister System at Washington Airport Answers Future Needs

By LEONARD EISERER

WHEN in 1929 with stock trading at a new high, the Teleregister Corp., an affiliate of Western Union Telegraph Co., placed in operation its first automatic quotation service, no one could visualize with accuracy the air traffic control problems of 1941, nor the part that the automatic posting idea might play in the regulation of air traffic in the "Flying Forties."

But just as when 12 years ago stock exchanges turned to the automatic quotation device to keep pace with the stock market activities, so today the Civil Aeronautics Administration has turned to an adaptation of the Teleregister system as the answer to the problem of keeping up with, and ahead of, the steadily increasing volume of air traffic that threatens to outgrow in short time the manual flight progress boards in operation at airport traffic control centers throughout the country.

While flight progress boards—on which are posted data for every flight operating in the area to give the controllers a complete picture of the air traffic with which they are concerned—have been improved measurably from the crude chalk boards of aviation's early days, they have continued to require the writing in of all data.

Placed in Operation

Late last month, however, without changing its fundamental plan of control, the CAA made a radical departure in its data posting system by placing in full operation the country's first electrical flight progress board at Washington National Airport.

The result of joint study and development by the CAA and the Teleregister Corp., the new device is confidently described by Glen A. Gilbert, acting chief of the CAA's air traffic control division, as fulfilling all basic requirements of an automatic system needed to replace the manual type flight progress boards.

"With increasing civil and military air traffic," Gilbert said, "we are in need of an automatic system for posting the flight data used in regulating air traffic and giving at a glance a picture of the points of congestion. The Teleregister device is the only instrument at hand that seems to answer that need."

Looking ahead, Gilbert foresees the day when traffic experience gained at Washington National Airport will be extended and automatic

airway traffic control boards installed at every airway traffic control center in the U. S.

Link All Centers

Ultimately, he said, it is hoped to link all traffic control centers together for the automatic interchange and posting of data useful to adjacent areas. Thus, for example, the Washington control center would automatically transmit to the New York airway traffic control board flight information concerning a plane in the Baltimore area (which is within the Washington control zone) bound for New York. The

Commerce 1942 appropriations bill, it was revealed that the CAA originally had asked the Bureau of the Budget for funds to install the automatic system at New York, Chicago, and Los Angeles, in addition to Washington. The Budget Bureau at that time, however, allowed the CAA only \$100,000 for the Washington unit, in the belief that the CAA ought to have actual operating experience with the device before extending its use to other points.

While automatic posting systems will be installed first at airway traffic centers controlling the heaviest traffic—such as New York and

burgh, St. Louis, Salt Lake City, San Antonio, and Seattle.

Posting Methods Outmoded

The Teleregister unit at Washington National Airport (described for the first time in *AMERICAN AVIATION*, April 15, 1940) posts flight data on all aircraft, civil and military, flying between 3,500 and 17,000 feet on civil airways within the Washington control zone, in addition to planes operating under 3,500 feet and subject to instrument flight rules.

In providing automatic reception and posting of data from air carrier radio positions and other reporting points, the new device revolutionizes existing manual methods of posting flight data. Reports are transmitted by teletypewriter and are routed by the receiving apparatus to the proper position on the board where they are displayed as figures in a tabulation.

The posting board itself consists of four bays, each with spaces for 50 sets of data. The sections are installed on a circular arc around the controllers' double-banked desks to provide optimum visibility for all.

Provision is made for posting the direction of flight, flight identification, ATC (air traffic controller's) time estimate, pilot's time estimate, actual time, proposed altitude, actual altitude, number to approach, expected approach time, and control data.

The control data are shown in a two-digit code to indicate the various clearances and instructions which may be issued.

Send Simultaneously

Only one posting at a time can be made on the flight progress board, but all teletypewriter operators may send simultaneously without interference.

This is made possible by receiving the incoming messages on reperforators, which produce a punched tape. The tapes are then fed auto-

(Turn to page 42)



New Automatic Flight Progress Board Replaces . . .

data would appear simultaneously on both the Washington and New York boards.

Another possible extension of the Teleregister system, to which some thought has been given, is the automatic transmission of pertinent portions of the flight data to airline offices so that the carriers might get an up-to-the-minute view of traffic in the area through which their planes are operating.

A further application of the automatic posting idea, suggested by Gilbert, is the possibility of transmitting data directly to transports in flight. A radio operated teletype printer to receive and record the information aboard planes is already being studied, he stated.

An auxiliary service conceivably might be extended to the military forces should they be interested in having a complete picture of air traffic in particular areas, but nothing has been done so far to develop this angle.

Hopeful of Expansion

Just when the Teleregister device will be installed at other airway traffic control centers is not known at present. However, CAA traffic control officials are hopeful of expansion of the system in the future "as traffic requires and funds permit."

Last spring during Congressional hearings on the Department of



Manual System at Washington National Airport

Air Express Booms But Is Still Small Part of Airline Revenue; Post-War Plans Talked

RIDING high on the wave of the defense program, the air express business month after month has been setting new records on the domestic airlines.

However, despite the fact that a new all-time high was reached in August, air express revenues still constitute by far the smallest part of the airlines' total revenues. In the year ended June 30, 1941, for example, total revenues were divided as follows: passengers, 70.9%; mail, 24.1% and express, 2.9%.

The 2.9% for express is only one-tenth of one percent higher than in the previous year. Over a 10-year period, the increase has been from 3% to 2.9% of total.

Gross revenue and tonnage in August were the largest in the history of the 14-year-old service, according to Railway Express Agency. The 1,130,422 lbs. transported in that month—a 51.5% increase over the same month of 1940—were largely made up of heavy industry cargo.

Promotion Campaigns

In an effort to build up these revenues, most airlines have undertaken aggressive promotion campaigns. REA is conducting a similar campaign.

The airlines consider express revenue, although only 2.9% of total, to be of great importance. With some lines, it represents the difference between a profit and a loss.

Even before the upswing of business accompanying the defense program, air express was being used with more and more regularity by many shippers. The U. S. Department of Commerce, in a recent publication, said that "the use of air express primarily for emergency shipment is definitely on the decline and regular air express shipment of certain commodities has become typical."

This trend has been given impetus by the defense program, and today many vital parts and supplies are flown to destination. Some time ago, the Army announced that it was using regular air express extensively. Indications are that this method of shipment will play an important part as long as the emergency lasts.

After the War

Still bigger things, however, are expected of the air cargo industry after the war. To prepare for this development, four airlines are participating in Air Cargo, Inc., a company formed to conduct research. Eventually, all airlines are expected to participate.

In Washington last fortnight, representatives of this company met with the Civil Aeronautics Board and explained their plans. Investigations and research are scheduled to begin in the near future.

Air Cargo, Inc., has not elected officers, but it was revealed that directors are W. A. Patterson, president of United Air Lines; C. R. Smith, president of American; E. V.



GILL ROBB WILSON, director of Universal Air Freight Corp., poses with one of the company's new motorcycle pick-up and delivery trucks used to pick up freight from customers for transportation to airports, and vice versa.

Rickenbacker, president of Eastern; T. B. Wilson, chairman of the board of TWA, and Col. E. S. Gorrell, president of the Air Transport Association. Each of the four airlines will pay one-fourth of the company's expenses up to \$100,000.

Air cargo activities, however, are not confined to the airlines. Universal Air Freight, handling ground pick-up and delivery, is already in business. Grover Loening, noted aviation consultant, has proposed an air freight company at least 51% owned by the airlines. American Air Freight Corp., formed by a group of businessmen headed by Earl B. Gilmore, president of Gilmore Oil Co., has notified the CAB that, following completion of extensive studies, it intends to file applications for certificates to engage in air transportation of freight over three transcontinental routes and one line from the Great Lakes to the Gulf of Mexico.

In addition to these, it is known that a group of railroads is definitely interested in entering the air cargo field. An attempt is now being made to organize them, enabling

them to get into action before the end of the emergency.

Just where Railway Express Agency will fit into the future picture is not yet known. Many observers feel that a pending CAB proceeding involving REA may hold the key to the entire situation.

This proceeding, with hearing scheduled for Jan. 5, 1942, will decide whether the contracts between REA and the domestic airlines are in the public interest.

On Mar. 17, last, CAB announced that although it considered REA an air carrier, it did not believe that the company was entitled to a "grandfather" certificate. REA is now operating under a temporary exemption from the provisions of the Civil Aeronautics Act, pending outcome of the CAB contract investigation.

Prospective air cargo operators were encouraged by CAB's refusal to issue a "grandfather" certificate to REA. They felt that if the permit had been granted, the airlines would never consider terminating their contracts with REA, because upon such termination REA could operate its own aircraft, paralleling every route in the country.

Braniff to Dedicate Base

Braniff Airways' new \$250,000 operations and maintenance base at Love Field, Dallas, will be formally dedicated Nov. 11, according to T. E. Braniff, president.

The complete base is comprised of a main hangar 120 x 160 ft., maintenance shops 60 x 270 ft., a two-story air-conditioned office building containing 10,000 sq. ft. of space, an engine test house and other miscellaneous buildings.

Revenue bonds were issued by the city of Dallas to cover part of the construction cost, with Braniff Airways advancing the balance. Bonds are to be amortized by Braniff in 10 years. The airline holds a 20-year lease on the property.

TCA Traffic Up

Trans-Canada Air Lines in August carried 9,234 passengers, 84 more than in July. Air mail totaled 129,427 lbs., 184 lbs. over July, and air express rose from 20,397 lbs. in July to 21,869 in August.

United Fined \$500 For Off-Line Flight

ON JULY 13, 1941, a United Air Lines Mainliner from the west arrived at Cleveland Municipal Airport too late to make its connection with Pennsylvania-Central Airlines for Washington. Aboard were seven Washington passengers.

Rather than leave the passengers at Cleveland, United flew them on into Washington.

United later received a letter from the Civil Aeronautics Administration's enforcement section, imposing a fine of \$500 on the company. Reason: United did not have an air carrier operating certificate to fly Cleveland-Washington.

As this issue went to press final action on collecting the fine had not been taken.

PAA Passengers Coo at 10-Day Delay

Things always happen nicely along the far-flung Pan American Airways System—especially when they're described by PAA's own omniscient publicity department.

Take the case of the eastbound Honolulu Clipper. At 22:00 GCT on the morning of Aug. 16 it almost took off from Guam. It didn't quite because someone, says the company's dutiful houseorgan, "made a remarkable discovery." The Clipper had grounded on a coral reef which hadn't been there the last time the chartmakers were around.

Now how do you suppose the passengers who had embarked in Manila felt about the ensuing delay (They had paid \$739 for a super-speed war-time dash to San Francisco).

The company's houseorgan tells us:

Miss Dee Bredin, NBC reporter, was grateful "for a congenial ten-day stay at the Pan American Hotel, with unexpected opportunity to finish Berlin Diary, and play golf, bridge, poker, and ping pong. Also grateful were the other passengers."

"After fuming at first, business men, diplomats, and foreign correspondents relaxed and enjoyed their stay at the American outpost until another Clipper took them to San Francisco."

Board Reports on Wichita Accident

PROBABLE cause of a ground accident between planes of TWA and Braniff at Wichita on June 1 was "the action of the captain of Braniff Flight 2 in remaining in the take-off area of the airport for an abnormal length of time without requesting the Braniff ground station to inform TWA that he had not yet taken off," CAB said Oct. 1.

During his take-off run, TWA Captain E. Z. Boqua observed the Braniff plane on the ground almost directly ahead of him.

Although swerving to the left, the TWA plane's right wing struck the left wing of the Braniff ship, with resultant damage to both aircraft. No one was injured. Capt. V. L. Powers of Braniff was awaiting a requested change of flight plan before taking off.

Among contributing factors, CAB gave "the failure of Braniff and TWA to establish an adequate procedure whereby ground personnel at Wichita would consult with each other so as to coordinate flight activities in the Wichita area."

The Board also commented on "the ease with which a white tail light of the type required by the Civil Air Regulations may be confused with the variety of white lights on the ground."

Northwest's 15 Years



First passenger plane used by Northwest was the Stinson Detriler, shown upper left. Picture at upper right shows Pilot David Behncke opening the door for his first passengers. Behncke is now ALPA president.



A short-lived practice—transferring mail from Rock Island train to NWA Hamilton



NORTHWEST AIRWAYS Inc., with two rented planes and six employees, opened air-line service on the 400-mile route between the Twin Cities and Chicago on Oct. 1, 1926. As the company—now Northwest Airlines Inc.—celebrated its 15th anniversary a month ago, it was operating a fleet of 12 Douglas DC-3's and four Lockheed Electras over a 2,500-mile system from Chicago to Seattle and Portland, with branch lines to Duluth and Winnipeg. It had over 800 employees.

As the second oldest U. S. airline opens its 16th year—its ninth under the leadership of ambitious Croil Hunter—still more expansion is contemplated.

In the early days of service to Duluth, the company used this Sikorsky amphibian.

In 1928, NWA purchased Ford trimotors. One of the Company's first Fords is shown above.



**CURTISS-WRIGHT
INTERCEPTOR-
FIGHTER 21-B**

Flying Weight—4,500 lbs.
Length—26' 4"
Span—35'
Climb—5,280' per minute
1,000 H.P. Wright
Cyclone Engine
Fuel—Shell Aviation
Gasoline.

**CURTISS-WRIGHT
(ST. LOUIS)**
Uses Shell Aviation
Gasoline Exclusively

...into the sky
at 88 feet per
second — on
SHELL
AVIATION GASOLINE

OFF the runway and into the air shoots Curtiss-Wright's 21-B... like a rocket into the sky. Up, up, up it goes . . . 88 feet per second. Then, leveling off, she knifes the clouds at 333 M.P.H.

What a plane! What a performance. What a beating plane and engine must take at today's super speeds. That's why Curtiss-Wright uses gasolines on which it can depend . . . Shell Fuel in the tanks of all new 21-B ships.

Shell Gasolines mean quick starting, instant throttle response, long cruising range in any ship. In fact, it is 100 octane gasoline (produced commercially for the first time by Shell) that makes American military planes unexcelled in performance, speed and flying range.

No wonder airport operators the country over are taking to fast-selling Shell Aviation Products! It pays to back a winner. Investigate. Address: Shell Oil Co., Inc., 50 West 50th St., New York, N.Y., or 100 Bush Street, San Francisco, Cal.



AVIATION

PRODUCTS



APPLICATION

American Airlines has filed application for a 588-mile route from Cincinnati to New York via Philadelphia. Company expects a \$55,012 loss on this route in first year, and profits of \$50,657, \$93,401, \$97,152 and \$199,763, respectively, in next four years.

American has indicated its intention to file application for extension of AM22 from Memphis to Oklahoma City and for extension of AM4 from El Paso to Oklahoma City via Lubbock. If AM4-23 is consolidated by CAB, company asks that Oklahoma City and Lubbock be named as intermediate stops.

Continental, Braniff and All American Aviation have filed applications for increased air mail rates. Complete story on page 40.

Delta Air Corp. asks CAB for (1) amendment of AM54 to add Louisville as an intermediate point between Knoxville and Cincinnati, and (2) amendment extending AM24 from Savannah to Jacksonville, Fla., via Brunswick.

State Airlines has filed application for feeder routes covering 2,061 miles. Complete story on page 39.

CAB DECISION

Marquette Probe: CAB has terminated its investigation to determine whether Marquette Airlines was a U.S. citizen during the "grandfather" period. Complete story on page 40.

EAL Routes: Eastern Air Lines' AM5, New York-New Orleans; AM20, New Orleans-Houston, and AM42, Houston-Brownsville, have been consolidated into one route by CAB. Service over the three routes has been conducted as one operation and consolidation would eliminate re-handling of through mail at the former terminal points, CAB said. Necessity of cancellation of flights between New York and Brownsville and New York-San Antonio will also be avoided when these former terminals are closed in by bad weather conditions, it added.

Northeast Rate: CAB has changed Northeast Airlines' mail pay from 36¢ to 28.6¢ to take into account mileage involved in two additional Bangor-Boston round trips. The rate adjustment does not affect NEA's total mail pay.

PAA Gets Fiji: Pan American Airways has been granted a stop at Suva, British Crown Colony of Fiji, on its U.S.-New Zealand route.

South Bend Stop: South Bend, Ind., has been named an intermediate stop on United Air Lines' AM1 and TWA's AM36.

EXAMINERS' REPORTS

Alaskan Merger: CAB Examiner Lawrence Kosters has recommended that Wien Alaska Airlines be allowed to acquire Mirow Air Service. "During the 20-month period ending Aug. 31, 1939, Mirow . . . was the leading passenger carrier in the Seward Peninsula area while Wien . . . carried the bulk of the freight in that area," Kosters said. He added that approval of the application would tend to make Wien the largest operator in the Seward area, but that the company will still encounter "real competition."

PAA in Alaska: Recommendation that Pacific Alaska Airways (now Pan American Airways, Alaskan Division) be permitted to include Tanana Crossing and Burwash Landing as stops between Fairbanks and Whitehorse and that PAA's application for approval of a contract for purchase and acquisition of certain properties and equipment of Lavery Airways be granted, has been made by CAB Examiner William J. Madden. The latter approval will give PAA a Fairbanks-Anchorage route. Madden also recommended that PAA application for a Tanana Crossing-Anchorage link be denied; that Alaska Air Lines' Juneau-Anchorage application be denied; that application of Alaska Air Lines and Don H. Goodman for approval of interlocking relationships be dismissed, and that application of Alaska and Woodley Airways for approval of consolidation and merger of said companies be dismissed.

Delta Rate: Examiner Thomas L. Wren has issued a proposed report containing air mail rate recommendation for Delta Air Corp. Complete story on page 40.

HEARINGS AND ORAL ARGUMENTS

AA Argument: Oral argument on the important American Airlines rate case ended Oct. 15 and the case has gone to CAB for final action. Complete story on page 43.

MISCELLANEOUS

Seeks Directorates: Thomas Wolfe is seeking approval of interlocking directorates involving him as vice-president-traffic-advertising of Western Air Lines and as director of Bowlin Sailplanes, Inc., San Francisco, Calif. Application states that Wolfe owned 1,000 of the \$2.114 Bowlin shares issued and outstanding as Sept. 1.

Patterson Approval: W. A. Patterson has asked CAB approval to serve as president of United Air Lines and as a director of Air Cargo, Inc.

AA Non-Stops: American Airlines has informed CAB that it intends to inaugurate the following non-stop service Nov. 1: New York-New Haven, New Haven-Providence, Bridgeport-Hartford and Niagara Falls-Detroit.

Asks Intervention: Keith Kahle, former western representative and part owner of Southwest Feeder Airlines, has asked CAB permission to intervene in company's application for several pick-up routes. Kahle states that he originally laid out the feeder routes "with much study and work" and that there had been an agreement that he should participate in the company and should be issued certain stock. He has demanded the stock, but SWF has "failed, refused and neglected" to issue it, he claims.

CALENDAR OF HEARINGS

Nov. 3—TWA, Chicago & Southern, Eastern, for Indianapolis-Detroit and Memphis-Detroit routes.

Nov. 17—American Airlines, route from El Paso and/or Ft. Worth to Mexico City.

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JOINT PAA-MATSON ROUTE UP TO CAB

Examiner Concludes Hearing on
Contract for U. S.—Hawaii Run

CAB Examiner Berdon Bell concluded hearing recently on a contract between Pan American Airways, Matson Navigation Co. and Inter-Island Steam Navigation Co. providing, among other things, for operation of a joint air service between the U. S. and Hawaii.

By deciding whether the contract, which also provides for joint sales arrangements, is in the public interest, CAB will in effect determine if the three companies will be allowed to set up a \$1,500,000 joint enterprise to operate the service.

Both Matson and Inter-Island have for some time had plans to enter the air transport picture, and Matson recently hired Clarence Belinn, formerly with Northeast Airlines and Kansas City Southern Airlines, to head its aviation department.

These two companies' next step depends upon what action CAB takes in the present proceeding. If CAB refuses to approve the contract, it has been rumored that either one or both of them will attempt to secure a U. S.-Hawaii route anyway.

Col. J. C. Roop, vice-president-treasurer of PAA, told Examiner Bell that PAA has given consideration as to how the joint company should be set up, but that there have been no consultations with Matson or Inter-Island.

"I would say that theoretically the most efficient means of operation would be for the joint company and Pan American to operate on this sector, with the same type of equipment and the personnel involved in operating it interchangeable so as to make the maximum utilization of the equipment available," Col. Roop said. He pointed out that equipment for the joint company would be subject to priorities.

He expressed the opinion that there would be no competition between PAA and the joint company. PAA, he added, is ready to put up its share of the required capital for the joint company.

Stanley C. Kennedy, president of Hawaiian Airlines (formerly Inter-Island), testified that Inter-Island is ready to put up \$375,000 and "is willing to go further, if necessary . . ." (Matson and Inter-Island are to put up \$375,000 each, PAA furnishing \$750,000).

Inter-Island Steam Navigation has

Alternate Routes for Maneuvers Announced

Eastern Air Lines and Pennsylvania-Central have been assigned certain alternate routes by the Civil Aeronautics Board for the period Nov. 14-30, during which Army maneuvers will be held in some east central states. Temporary routes assigned are: (1) Washington or Richmond, or both, to Charleston, S. C., via Norfolk, Va., and Wilmington, N. C.; (2) Washington or Richmond, or both, to Atlanta via Roanoke and Knoxville; (3) Charleston to Atlanta via Alma, Ga., or Macon, Ga., or both, and (4) Norfolk to Knoxville via Richmond and Roanoke.

United Pays \$100,000 for UHF Transceivers

UNITED Air Lines has ordered 100 new ultra-high frequency combination transmitter-receivers and is making extensive flight tests of new-type plane antennas, according to company announcement.

In purchasing the transceivers at a cost of \$100,000, the company states it is "looking forward to the use of static-free ultra-high frequencies for plane-ground and plane-to-plane communication."

The transceivers are in addition to a similar number of receivers ordered some time ago for use in connection with ultra-high radio range stations, J. R. Cunningham, UAL director of communications, said.

Following flight tests with new type antennas to be used in ultra-high radio communication, company states that "excellent results" have been obtained with stainless steel vertical rods, 20 inches high and a quarter of an inch thick, which are similar in appearance to automobile antennas.

put "a little over half a million dollars" in PAA stock and now owns 27,500 shares, Kennedy said. A local service between the U. S. and Hawaii would increase passenger travel on that route, he added.

F. A. Bailey, executive vice-president of Matson, testified that the joint company would not compete with Matson's steamship passenger travel.

State Airlines Seeks Feeder Routes Covering 2,061 Miles of Territory

THREE "feeder" routes, covering 2,061 miles and stretching from Detroit, Mich., on the north to Jacksonville, Fla., on the south were sought Oct. 21 in an application filed with the Civil Aeronautics Board by State Airlines, Charlotte, N. C.

The routes requested are: (1) Pittsburgh to Jacksonville via Connellsburg-Uniontown, Pa.; Elkins, W. Va.; Covington-Clifton Forge and Roanoke, Va.; Winston Salem or Greensboro, Salisbury, and Charlotte, N. C.; Columbia and Orangeburg, S. C., and Savannah and Brunswick, Ga.; (2) Detroit to Norfolk, Va., via Toledo, Findlay, Marion, Columbus, and Chillicothe, O.; Huntington, Charleston, Beckley and Princeton, W. Va.; Roanoke, Lynchburg, Petersburg and Richmond, Va.; (3) Louisville to Wilmington, N. C., via Knoxville, Tenn.; Asheville, Shelby, Charlotte, Durham and Raleigh or Hamlet-Rockingham and Fayetteville, N. C.

In 1939, State started an "inten-

property and mail, the service to be essentially local in character, and in addition the aiding and supporting of carrying by the main airline carriers of passengers, property and mail by connections to and from common carrier terminals served by it and the main airline carriers," application states. Formation of the company "was premised on a desire to ascertain that the development of the aviation transportation industry was such that feeder lines as herein proposed are needed to implement the services of the main airline carriers," it adds.

Present stockholders and other persons are now preparing to have the capital of the company increased by additional cash stock subscriptions and commitments so that there will be adequate working capital for the proposed operations. "For this purpose it is contemplated to issue stock up to \$1,000,000," application states.



ONE OF THE two Bellanca Cruisairs which State Airlines has been using in its non-scheduled operations. Company contemplations purchase of twin-engined equipment if certificates sought from CAB are granted.

sive study" of the proposed routes, and in late 1940, convinced that there was a public need for the service, bought two Bellanca Cruisairs for experimental flights, according to the application. On Apr. 3, 1941, the company offered itself to the public as a non-scheduled or charter operator, and since that time has completed over 500 flights covering 75,000 plane-miles.

State may purchase Lockheed Lodestar planes if the application is granted, but explains that it also has other types of equipment under consideration.

"This application has for its purpose the carrying of passengers,

"In addition, your applicant is presently negotiating with responsible financing institutions within the communities to be served to undertake to buy equipment, trust certificates representing up to 75% of the capital cost of the necessary aircraft and engines. The balance of the funds for purchase of equipment is to be taken out of the capital structure."

Based on two round trips daily with Lodestar equipment, without provision for mail pay, the company estimates that during the first five years its losses will be \$616,546, \$518,065, \$419,413, \$320,761 and \$222,109, respectively.

SUMMARY OF U. S. AIR TRANSPORT OPERATIONS FOR JULY

(Compiled by AMERICAN AVIATION from Reports to CAB^a)

	Rev. Pass.	Rev. Plane Miles	Rev. Pass. Miles	Avail. Seat Factor	Pass. Load	Planes Operated	Exp. & Frt. Lb.-Miles	Mail Lb.-Miles	Pass. Revenue	Mail Revenue	Exp. & Frt. Revenue	Operating Revenue	Operating Expense	Net Income Before Inc. Taxes
All American	00	70,366	00	0.00%	8	238,633	1,869,064	00	\$ 116	\$ 116	\$ 26,192	\$ 26,192	\$ (red)	
American	113,604	2,491,160	36,821,324	93.854,984	72.08%	81	259,865,715	1,988,345	268,345	78,750	2,478,200	1,869,064	61,226	
Brani	4,633	473,211	6,416,421	87,112,234	65.20%	31	1,120,200	60,020,970	202,235	58,492	5,548	312,205	294,088	16,188
Catalina	4,146	85,927	1,136,162	1,743,224	65.20%	6c	4,656,709	1,991,988	60,996	23,036	247	93,573	80,114	100,657
Chicago	5,358	20,717	160,740	206,160	77.97%	2	384,780	00	26,538	00	193	27,100	15,544	11,226
Continental	6,222	12,700	2,395,161	4,242,568	50.45%	6	9,283,105	26,827,014	10,088,328	35,118	2,048	14,212	1,244,268	3,668
Eastern	7,668	159,564	2,178,092	4,792,802	45.45%	9	1,027,737	8,233,152	27,726	54,478	204	82,736	80,017	1,545
Inter-Island	46,218	1,658,149	17,020,556	32,500,419	82.37%	38	2,482,068	289,961,331	884,844	165,635	1,123	139,950	152,933	13,428 (red)
Inter-Island	4,501	1,101,547	1,101,547	1,101,547	100.00%	3	2,029,200	33,920,900	81,202	36,222	1,938	81,778	81,778	221,821
Inter-Island	4,511	61,485	61,485	853,747	11.62%	6	350,520	4,354,168	57,646	3,738	63,054	46,079	16,981	
National	3,733	196,564	954,618	2,126,407	44.90%	9	2,184,596	11,757,810	43,291	67,024	785	111,604	120,639	10,198 (red)
Northeast	2,492	115,115	256,608	1,512,304	36.04%	7	980,755	8,102,373	26,298	28,388	80,040	80,040	1,187	1,187 (red)
Northwest	4,492	118,869	7,483,483	11,543,892	45.00%	8	2,708,203	45,708	31,092	27,75	80,740	86,597	2,768	
Pan-Central	17,773	891,826	7,265,222	11,543,892	52.95%	17	37,026,763	165,429,688	306,797	170,167	9,354	493,691	364,357	106,904
TWA	36,927	835,454	7,097,134	12,467,765	58.92%	22	24,991,930	33,969,864	395,140	70,260	9,152	477,592	438,096	35,426
United	44,101	1,600,323	20,920,354	33,659,962	62.15%	45d	172,886,000	40,000,000	1,000,000	1,000,000	1,000	1,000,000	1,000,000	1,000,000
Western Air	7,012	304,094	2,511,103	4,808,275	52.22%	10	21,903,445	42,475,032	116,276	68,226	9,419	1,987,244	1,579,120	420,208
TOTALS	381,782	12,426,261	138,204,828	21K 144,224	64.03%	370	909,365,046	2,252,903,932	\$6,973,191	\$1,698,484	\$252,748	\$9,354,831	\$7,735,039	\$1,698,852

^a All monthly reports to CAB are subject to revision and year-end adjustment.

^b Mail rate had not been established by CAB.

CAB Ends Marquette Investigation, Clearing Way for Purchase by TWA

2 Members Dissent, But Majority Finds That Litigation in Canadian Courts Might Delay Case Indefinitely

THE CIVIL Aeronautics Board in a 3-2 decision on Oct. 17 terminated its investigation into the citizenship of Marquette Airlines, thereby enabling TWA to complete its purchase of Marquette. TWA has been operating the Marquette route for more than a year, with final purchase depending on the results of the investigation.

TWA will pay \$313,000, plus accrued and accruing interest, for Marquette, which holds a certificate between St. Louis and Detroit via Cincinnati, Dayton and Toledo.

The Board, after issuing Marquette a "grandfather" certificate, reopened the case when it came into possession of evidence indicating that the company might not have been a U. S. citizen during the "grandfather" period. Principal issue, CAB said, turns around the date upon which Peter Beatty, a British subject, disposed of approximately 48% of Marquette's stock which had been acquired through two personal investment Canadian corporations controlled by Beatty.

Canadian Interests Oppose

Efforts of the Board to obtain information in Canada have been "vigorously opposed" by these corporations, CAB said. "A year and seven months have gone by and we are still in the courts of Canada," it added. Although lower Canadian courts have upheld CAB's right to obtain the information, an appeal has been made to the Canadian Supreme Court (argument to be heard shortly) and delays "possibly

running into years" may be necessary, according to CAB's majority opinion, concurred in by Members Harilee Branch, Edward P. Warner and Oswald Ryan.

While court action continues, TWA is prevented from making long-range plans for operation of the Marquette route, the majority said. "It is self-evident that where one of the large air carriers is prevented from taking maximum and immediate advantage of measures of economy and efficiency in operation, the public interest is not served and the objectives of the Civil Aeronautics Act . . . are not advanced," it stated.

The balance of public interest lies, "we think, on the side of closing the Marquette proceeding now, before further expense and effort is expended in the forthcoming struggle in the Supreme Court of Canada," the majority added. "We do not give our blessing to a doubtful past; but we clear the way for the growth and development of our air transportation system in the affected area which, in this case, we judge to be more important."

Even the majority, however, expressed its doubts on several issues in the case. "One of the questions which is most difficult to solve . . . relates to the casual manner in which substantial sums of money, and securities having corresponding values, were sent from place to place without the customary records being made of their possession and transmission," it said.



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MID-CONTINENT AIRLINES

THE GREAT PLAINS ROUTE



ALUMINUM AND STAINLESS STEEL SHEET METAL FABRICATORS

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3 Carriers Ask Higher Mail Pay; Delta Rate Proposals Issued

CONTINENTAL Air Lines, Braniff and All American Aviation during the past fortnight filed applications with CAB for increased air mail rates on their respective routes.

At the same time, CAB Examiner Thomas L. Wren issued a proposed report recommending that Delta Air Corp. receive a rate of 23c per airport-to-airport revenue plane-mile.

Continental, now receiving 38c, asks that its rate be boosted to 44c retroactive to Oct. 1, 1940, effective date of the current rate. Company claims that its operating expenses on AM29, Denver-El Paso, and AM43, Pueblo-Tulsa, are higher than the 53.98c per mile estimated by CAB in its decision last May, and that passenger revenues have been less. It adds that the Wichita-Tulsa extension was not provided for in CAB's last order.

Braniff asked that pay on AM9, Chicago-Dallas, be raised from 17c to 26c; AM15, Amarillo-Brownsville, from 23c to 27c, and AM50, Houston-Corpus Christi, Houston-San Antonio, from 28c to 38c. Present rates are "inadequate to meet the

Still Have Doubts

Later it added: "We had at the time of reopening the 'grandfather' proceeding, and we still have, doubt in our minds as to the citizenship of Marquette during at least a part of the 'grandfather' period, due to the inconsistencies in the record . . . Although that doubt was sufficient to justify us in instituting a further inquiry . . . it has not been possible to obtain any appreciable amount of additional information and the record as it now stands is not sufficient in law, in our opinion, to constitute proof . . ."

CAB Members G. Grant Mason and George Baker differed sharply with the majority. In a separate opinion they said it is "importantly unique that this Board should announce to one and all that skillful and prolonged litigation such as that with which the Canadian respondents have opposed us . . . will, through our discouragement, result in our complete withdrawal."

They added: "Though we admire the frankness of the majority opinion and we sympathize with its desire for expeditious action, we are convinced that to stop the investigation at this particular time, when constructive evidence one way or the other may well be within our grasp and when continuance will not adversely affect the public interest to a profound extent, is unwarranted in high degree."

needs of petitioner" under the Civil Aeronautics Act, application said.

All American, which in September was granted 40c per mile for its pick-up operations, asks an increase to 42c. CAB determined in its decision that AAA could effect a saving in messenger cost by having such service performed over the entire route by Railway Express Agency, "whereas in fact and shown by contracts filed with the Board, such a saving cannot be accomplished," company says.

In his report on Delta, Examiner Wren recommended: for the period Dec. 1, 1939 to July 14, 1941, 20c per mile on AM24, Charleston-Savannah-Dallas-Ft. Worth; for the period from July 15, 1941 and terminating on the date of the Board's order herein, 35c per pay-mail mile flown on AM24 and AM54, Atlanta-Cincinnati; on and after CAB's order, 23c per mile for first 300 lbs. or fraction plus .7c for each additional 25 lbs. or fraction.

Delta's acquisition of DC-2's and more recently DC-3's "constituted a reasonable exercise of honest, economical and efficient management . . . In view of the facts of record, it appears that the inauguration of service with DC-3 equipment over route 54 was justified . . ."

Considering the future, Wren said that the probable annual results of operation of the presently effective schedules are, for both AM24 and 54: revenue plane miles, 3,107,000; revenue passenger miles, 25,073,000; direct flying expenses, \$949,500; passenger service, \$87,800; indirect flying expense, \$435,600; traffic and advertising, \$164,400; general and administrative, \$120,000; total operating expense, \$1,757,300.

Non-mail revenue, he said, will be: passenger, \$1,144,700; express, \$13,400; excess baggage, \$10,100; incidental, \$2,000; total non-mail revenue, \$1,170,200; break-even need, \$599,100.

Delta's base rate on AM24 has been 29c, but because of variations from the base, company actually received 26.19c per pay-mail mile and 17.15c per revenue mile during 1940.

From CPTP to RAF

Two-thirds of the RAF American Eagle Squadron learned to fly in CPTP, according to word received by CAA from Pilot Officer Harold Strickland, a Chicagoan now stationed at London as a member of the Eagle unit. It is "amazing," Strickland says, that many of the boys now "hitting the Jerries hard hopped off on their first solo flight in a Cub about 12 months ago."

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Airline Personnel

Operations Appointments



Recent appointments in airline operations departments include the following, left to right:

E. N. WHITNEY, chief dispatcher of Western Air Lines, has been promoted to assistant to the vice-president-operations. Whitney joined the company in 1929. **LUTHER HOFFMAN**, now electrical engineer for TWA. He formerly was in the communications department.

C. J. JENSEN has been named superintendent of flight tests-training by Mid-Continent Airlines. "Bud" Jensen until recently was an air carrier inspector for the CAA.

EDMUND SCHROEDER, recently appointed superintendent of mechanical operations for the eastern operations of United Air Lines.

D. S. Ingalls Named PAA Ferries Officer

David S. Ingalls, Assistant Secretary of the Navy in charge of aeronautics from 1929 to 1932, has been named vice-president of Pan American Air Ferries Inc. PAAF is wholly owned by Pan American Airways and was formed to ferry bombers to Africa and the Middle East. Juan Trippe, PAA president, is president of PAAF.

Brock from CAL to CAB

John P. Brock has resigned as district traffic manager for Continental Air Lines in Denver to join the Civil Aeronautics Board as assistant chief of the information division under Alice Rogers Hager.

TWA Promotes Cocke, McCollum, Marechal



E. O. (Oz) Cocke, former TWA regional manager in Pittsburgh, has been named to the company's newly-created post of sales manager, with headquarters at Kansas City.

Cocke has been replaced in Pittsburgh by Clyde E. McCollum, Philadelphia district traffic manager, and former Pittsburgh dtm. McCollum has been succeeded in Philadelphia by Louis P. Marechal, who has been serving as Philadelphia city sales manager.

Cocke, who is 37, has been with TWA and its predecessor, TAT, since 1929. He successively held posts in the operations and traffic departments in Columbus and Kansas City until 1935 when he was made dtm. in Los Angeles, a position which he held until appointed regional manager with headquarters in Pittsburgh.

McCollum has been with TWA and TAT for 12 years and has served as dtm. in Wichita, Tulsa, Chicago, Indianapolis, Pittsburgh and Philadelphia. Marechal, a former Philadelphia newspaper reporter, joined TWA in 1935, and has worked in the traffic department at Kansas City, Chicago and Philadelphia.

IN THE Sales & Traffic OFFICE

William Tonesk, formerly with Pan American Airways in New York, has been transferred to the company's Washington sales office.

Allen Birmingham has succeeded **Woodrow Yamini** as Delta's city traffic manager at Jackson, Miss. Yamini has gone into the Army.



Lester G. Wood Jr., left, has been named district traffic manager for United at Akron, while **Arthur W. Jerrems**, right, has assumed a similar position at Des Moines.

Robert W. Butler, formerly with United in Cleveland, has been appointed sales representative in western Pennsylvania by American. Butler, who succeeds **Thomas J. Harris**, has headquarters in Cleveland.

Miss Bernice J. Caldwell has been named chief stewardess for United's eastern division, succeeding Miss **Ruth Flekke**, resigned.

Jerry Greim and **Esther Berieter** are new teletype operators for TWA in Pittsburgh, and **Earle Braun** is working on telephone sales.

Paul Henderson, of United's Washington traffic office, has been transferred to Chicago.

Paul Shesky, of TWA's Chicago staff, has been named station manager at Toledo.

Malcolm Heywood has been named superintendent of field traffic for Northwest at Seattle.

E. Hayes has joined Canadian Colonial Airways as transportation agent. **Jack Birch**, formerly station manager for CCA at NY, is now an ensign in the Navy, located at Norfolk, Va.

J. P. Bowles, for 12 years with the Matson Navigation Co., has been named Australian traffic representative for United, with headquarters at Sydney. **W. P. Feiten**, formerly assistant to United's director of sales, is now counter manager for the company. New United reservations personnel include **John Burnett** and **Miss N. M. Langvardt** at Chicago, **Miss H. M. Reardon**, **C. D. Updegraff** and **W. G. Shar** at San Francisco, **G. L. Anderson** and **B. Whitehouse** at Seattle, **Mrs. L. D. Smith** and **D. F. Yonts** at Denver, and **James T. Murphy** at New York.

Richard A. Dick, assistant general traffic manager of Western Air Lines, has been promoted to general traffic manager. Dick was previously with United, TWA and Northwest.

Edward Benz has been named district traffic manager for Northwest in Seattle, succeeding **A. E. Floan**, who now heads the company's department of economic research.



Reay Jones, left, is now TWA's assistant personnel director. He was formerly system chief clerk of the traffic and sales department. **Wally Smith**, right, has been named district manager of TWA's newly-created Honolulu territory. He has been manager of the Castle and Cooke Travel Bureau in Honolulu for 13 years.

To 'Somewhere in Africa'



Lyell S. Collins, **R. Harold Richardson**, and **Theodore C. Engh**, three recent graduates of the American School of Aircraft Instruments, Glendale, Cal., have been employed by Pan American Airways and assigned to a new maintenance base "somewhere in Africa." They left for Africa last month. Shown above, left to right, are Richardson; **William J. Watkins**, chief instructor of the school; Engh; **H. W. Hartley**, president of the school, and Collins.

Automatic Flight Board

(Continued from page 35)

matically, one at a time, through tape transmitters to repeat the message to the posting equipment. Here it is "read" by relay circuits and improper or garbled portions rejected to prevent disruption of existing postings on the board.

The entire message is in all cases recorded on a teletypewriter adjacent to the controllers. Whenever any portion is rejected, a signal is given to call their attention to the printed record.

For posting from ATC control positions, four specially designed keysets are provided. These are equipped with lucite keys, which are illuminated from within as they are pressed and remain illuminated until the posting operation is completed, thus enabling the operator to see exactly what will be posted.

Remove at Will

These keysets permit the operators to post, alter or remove any time, altitude, or other figure at will. In addition, they can rearrange the order of the rows to maintain any desired sequence of times or altitudes or other factors. In hand-posted boards this is accomplished by providing removable slots or card-holders which can be taken from one place and inserted in another place made by raising all those above the desired location.

In the electrical board, the equivalent operation is performed merely by pressing the proper keys and since there is no need for approaching the board at all, interference with the controllers' vision is avoided.

The controllers estimate the time each flight will reach the various "fixes" en route—that is, intermediate points on the way—using a departure time or a previous reported time as a base and adding successive increments of flying time based on their knowledge of aircraft speeds, winds, and other weather conditions.

Local Keysets

While this basic procedure is unchanged with the Teleregister the electrical system provides a new tool in the form of a calculator controlled from the local keysets. This adds the successive increments to the base time and posts the resultant figure in the proper place on the board as governed by the key selections made by the operator.

Data on the board appear in yellow figures against a dark blue background, giving high visibility without too sharp contrast.

The physical arrangement of the flight progress board is extremely flexible, the amount of space as-

signed to each fix being adjustable by means of individual fix posting switches mounted below each section. When a reassignment is made by means of these switches, the data already posted can be moved up or down to occupy the desired fix postings by a simple manipulation of the keysets.

Complete permanent records of the operation of the posting system are provided by two monitor printers. The first, as already noted, prints in view of the controllers every message received from a distant point. A second operates automatically every time a posting is made on the board, and makes a continuous record of such postings, taking its data figures directly from the indicators upon which they are displayed in the board.

Frees Personnel

Principal advantage in the automatic posting system at present lies largely in the elimination of the necessity for receiving and copying reports, thus freeing the control personnel for continuous attention to traffic patterns and problems and the issuance of clearances. Delays in reporting flight movements to the control center are prevented by providing for immediate transmission when received, without the need for signalling one of the ATC staff to copy the report.

While the automatic system will cut down the number of personnel needed to handle flight data, the extent of saving in this direction will not be known until after more experience is gained in operation of the device.

An important feature of the new

Teleregister system is that it provides for future expansion unusual in automatic installations of this character.

While the board has four sections accommodating a total of 200 fix postings, the unit can be enlarged for more traffic in the future simply by installing additional panels on each side.

Since each plane, on the average, appears on the board in two or three places, the present Washington set-up can handle about 80 planes at any one time, enough to meet traffic demands of the present and of the immediate future.

O'Riley Named

Sir Lennox O'Riley has been named chairman of British West Indies Airways, Port of Spain, Trinidad, B.W.I., according to Lowell Yerex, managing director. The 212-mile route operating between Port of Spain and the Barbadoes, with a stop at Tobago, now has one Lockheed Lodestar and one Lockheed 14. Other BWIA board members will be elected soon.

Asks Clarksburg Suspension

American Airlines has asked CAB to approve temporary suspension of service at Clarksburg, W. Va., on the grounds that the company deems it "inadvisable at the present time for reasons of safety to operate into and out of such airport with Douglas DC-3 or Douglas DST equipment." Improvements being made to the field are expected to make it suitable for this equipment.

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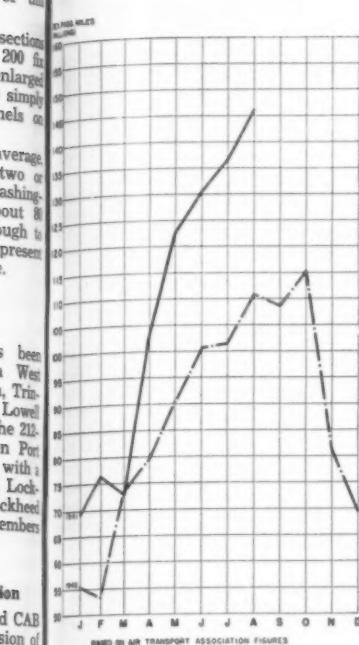
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Still Climbing



Revenue passenger miles of the domestic airlines continue to reach record heights, with 136,495,505 flown in July and 146,041,369 in August.

NAL's 7th Birthday

National Airlines celebrated its seventh birthday on Oct. 15 by inaugurating a third daily round trip between Jacksonville and Miami via Tampa. The company now flies 4,860 miles daily compared with 292 miles seven years ago.

Six Recommendations for Transport Are Submitted by Nichols Committee

THE HOUSE Select Committee to Investigate Air Accidents, headed by Cong. Jack Nichols (D., Okla.), on Oct. 15 submitted to the House six recommendations for air transport operations.

The recommendations: (1) immediate development of adequate clear vision devices for aircraft windshields, (2) a thorough study of the present system of weather observation and forecasting, (3) adoption of minimum uniform lighting systems for all airports certified for use by air carriers, (4) a substantial increase in the number of CAA airport and air carrier inspections by qualified inspectors, (5) certification of airport control tower communications equipment by CAA, and (6) in the interest of unified and coordinated air traffic control, not less than one member on every shift in airport control towers should be employed by the air traffic control division of CAA.

The recommendations were attached to the Committee's report on the American Airlines' night landing accident (no fatalities) at Lunken Airport, Cincinnati, on Mar. 10.

In its accident report, the Com-

CAB Will Set Precedents In Deciding American Rate

Company Completes Argument in Controversial Case Which May Revise Entire Mail Pay Policy

WITH THE conclusion of oral argument on Oct. 15, the important American Airlines air mail rate case, containing questions of policy affecting every U. S. airline, has reached the hands of the five members of the Civil Aeronautics Board for final action.

In his proposed report, CAB Examiner F. A. Law, Jr., had recommended that American receive 9.5c per mile on a "system" basis, and that the company's 1940 pay be reduced retroactively by more than \$1,000,000.

Among the more important questions which must be decided by the Board are:

1. Will the "fair value" doctrine be used to set air mail rates? Under this doctrine a carrier's mail pay would enable it to meet all expenses and give it the opportunity to earn a return on the fair value of its property.

2. Will the Board adopt a policy of cutting airlines' rates retroactively?

3. Will rates set by the Board include a "reward" to the carrier for the development of non-mail revenues?

4. Will the Board consider, in setting rates, the rising costs occasioned by the national defense program?

In oral argument, Hamilton O. Hale, attorney for American, stated that allowing a return on "fair value" is (1) destructive to initiative, (2) is difficult to apply to an industry with rapid technological changes, and (3) is difficult because of the relation of revenues to investment. CAB should set rates by the "exercise of sound discretion," he said.

Oppose Recapture

Both Hale and Howard Westwood, attorney for the Air Transport Association, urged the Board not to cut rates retroactively. Hale stated that such a policy would make it impossible for an airline to have efficient management and to formulate long-range policy if the company was afraid that at any time CAB might start an investigation of its rates over a past period. This would create a "mental hazard," he said. Westwood pointed out that the Civil Aeronautics Act contains no provision giving CAB the right of recapture. The recapture of mail pay would perpetuate

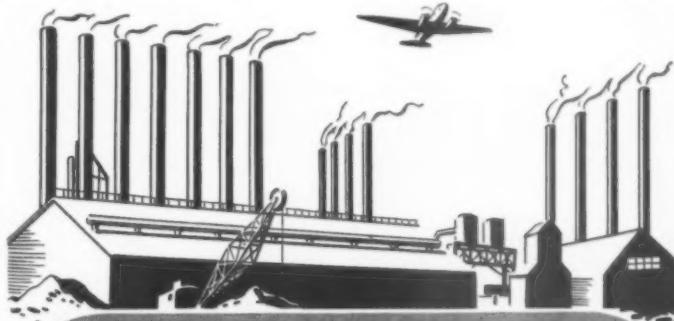
and aggravate the uncertain position of the industry which the Act was created to amend, he said.

Concerning a "reward" for development of non-mail revenues, Hale told the Board that AA's success in building up these revenues "just didn't happen," but was due to an aggressive campaign by the company. Although Examiner Law commented on this campaign, he failed to give it proper consideration in recommending a rate, he said.

Costs Increase

The defense program has increased costs, and AA is faced with a \$1,105,000 annual increase in known items of expense, Hale told CAB. Net operating profit of AA decreased from 9c per revenue mile in 1939 to 5.58c at June 30, 1941, and this decrease will continue, he said. The airlines, he continued, are in a position similar to that of the railroads prior to U. S. entry into World War I.

E. T. Nunneley Jr., public counsel, disagreed with Hale and Westwood by stating that CAB does have the power to recapture mail pay. He said, however, that this power should be exercised with great care. He also asked CAB to consider the following factors in setting AA's rates: (1) that the air transport industry is still in the developmental stage, with earnings not yet stabilized, (2) that development of non-mail revenues be considered, and (3) that CAB take some account of rising costs.



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ROUTE OF THE STRATOLINERS

Unlisted Trading Reflects Interest in Aviation Stocks

By F. H. STEVENSON

INDICATIONS of a tremendous public interest in aircraft stocks are found in the fact that regional stock exchanges have applied to the Securities & Exchange Commission for unlisted trading privileges in a total of nine of these issues in the last two months, and that at the same time applications were granted for such trading in two issues. Such applications very definitely point to a trend, but are sometimes overlooked.

They also show considerable actual trading activity in the issues for which applications are filed, for the applying exchange must offer *proof of such activity in its vicinity* before an application can be granted. In turn, this presupposes considerable activity on the primary exchange where the stock is actually listed.

In addition, the fact that some of these issues in which unlisted trading was asked have already been granted such privileges on a number of exchanges—more than five in some cases—further supports the theory that much public interest and considerable potential, as well as actual, trading activity exists.

This upsurge in interest in aircraft stocks by the regional exchanges dates from around the recent serious turn of the war, with the applications covering both *manufacturing* and *airline* companies.

SEC officials see these first applications as indicative of a trend, and privately predict that there will be many more applications to come. One government factor, in addition to the above, is the SEC rejection of the New York Stock Exchange multiple rule which provided, in effect, that exchange members could not trade on regional exchanges as odd lot dealers.

This is significant because, while regional exchanges are granted unlisted trading privileges in both round and odd lots, in actual practice almost all the secondary trading is in odd lots. Furthermore, it seems likely from the attitude in SEC circles that most of these applications will be granted.

Applications Listed

The applications were as follows: Philadelphia Stock Exchange: American Airlines, Inc., \$10-par common; Consolidated Aircraft Corp., \$1-par common; Eastern Air Lines, Inc., \$1-par common; National Aviation Corp., \$5-par common; Pan American Airways Corp., \$5-par capital stock; and United Aircraft Products, Inc., \$1-par common.

Detroit Stock Exchange: Aviation Corp., \$3-par capital stock; Bendix Aviation Corp., \$5-par common; and Curtiss-Wright Corp., \$1-par common. The latter is listed on the New York Stock Exchange and is already traded on an unlisted basis on the Boston, Los Angeles, Philadelphia, Pittsburgh and San Francisco Exchanges.

An indication of the extent of trading in aircraft stocks in local areas is found in a recent SEC opinion granting the Chicago Stock Exchange unlisted trading privileges in two stocks which gave activity as follows: Curtiss-Wright Corp., \$1-par common, 7,431,979 shares outstanding, 340,345 held in vicinity and 297,022 traded during the year; Glenn L. Martin Co., \$1-par common, 1,097,323 shares outstanding, 53,704 held in vicinity and 106,543 traded during the year. It should be remembered that this volume represents only the number of shares traded through the Illinois

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A&T Corp. Redefined

Aviation & Transportation Corp. has ceased to be an investment company as defined by the Investment Company Act of 1940, according to a ruling of the Securities & Exchange Commission. On Jan. 22, company directors adopted a dissolution plan, later approved by stockholders. The SEC order stated that all corporation assets have been distributed except \$211,881 being retained pending settlement of certain tax matters. On the settlement of these matters, remaining funds will be distributed to stockholders.

AAA Stock Issue Planned

An offering of 20,000 shares of Class A no-par common stock of All American Aviation, Inc., at \$4 a share is planned shortly by Kobbe, Gearhart & Co., Inc., N. Y. C. and Jenks, Kirkland & Co., Philadelphia. Offering will not constitute new financing. The investment firms have a joint interest in an option on these shares from Arthur P. Davis, a director, at \$3 a share, or an aggregate discount of \$20,000.

nois offices of member firms of the Chicago exchange and probably represents only a small percentage of the total trading.

There are many highly important implications in these requests for unlisted trading. It must be remembered that the primary purpose of exchange members is to make money.

Therefore, in applying for unlisted trading, they believe that sufficient activity will develop to be profitable. Theoretically, it makes no difference to a stock broker whether the market goes up or down as he still gets his commission whether he buys or sells for his customer.

Favor Rising Market

In actual practice, however, most brokers tend to favor a rising market as customers are likely to trade more actively when they are making money.

Inasmuch as a large proportion of customers are necessarily "little fellows" whose tendency is to trade with the trend (i. e. buy when the market is rising and sell when it is descending — very often losing money in both directions), it can be argued that the members of the exchanges anticipate, or at least hope for, a rising trend in aircraft stocks. In view of increased taxes, proposed profit-limitation legislation and other factors, this seems a little optimistic insofar as the immediate outlook is concerned.

The market for aircraft stocks was fairly active during two weeks prior to this writing, some 25 issues traded on the Big Board showing a turnover of 536,500 shares during the period.

Prices fell off in about the middle of the period, but edged back to close with mostly fractional changes on the downside.

Curtiss-Wright Common

Curtiss-Wright common was by far the most active stock, accounting for about 25% of the total turnover or 167,200 shares. This can be accounted for by the declaration of a \$1 dividend on Oct. 10 as on the following day alone some 44,300 shares changed hands and trading returned to about normal levels after Oct. 17, the record date. The stock closed off only 3/4 despite closing of the record books on the \$1 dividend.

Dividends

Wright Aeronautical Corp. declared a dividend of \$8 per share on Oct. 10, causing stock to jump six points on the Big Board. The dividend was paid Oct. 28 to holders of record Oct. 21. Wright paid \$4 on Dec. 14, 1940.

Curtiss-Wright Corp.—\$1 payable Oct. 30, of record Oct. 17.

Kinner Motors, Inc.—5c payable Nov. 15, of record Nov. 1. Company paid 5c dividends on Feb. 15 and May 15, and 10c on Aug. 15. Backlog is approximately \$3,500,000.

Douglas Aircraft Co.—5c payable Nov. 21, of record Nov. 7. Previous payment was \$3 on Nov. 20, 1940.

Leece-Neville Co.—20c regular quarterly dividend, plus 30c extra payable Oct. 15 of record Sept. 25.

Manning, Maxwell & Moore Inc.—25c paid Oct. 2 of record Oct. 30. A like amount was paid July 2.

Seaboard Airways Arranges Financing for Route Struggle

Seaboard Airways, Inc., under an agreement authorized by a Federal court at Norfolk, Va., between Ladenburg, Thalmann & Co., and Seaboard Air Line Railway, would be financed by the financial house. The court has authorized receivers of the railroad, parent of the airline, to complete the contract.

Airways' application for permission to start operations in hearings before CAB would be financed and if a certificate is granted the parent would have option of receiving in cash \$78,500 expended by it to date in the air company, or of purchasing up to 30% of all voting stock of the airline and, if desired, also 30% of non-voting securities, other than equipment trusts.

If the latter option is exercised, the receivers would be entitled to be reimbursed for the \$78,500 put at the disposal of the subsidiary company.

Wright Aeronautical, which jumped six points on the declaration of an \$8 dividend, eased back down to close off 11 1/2 points on the period. Trading totaled, however, only 300 shares.

Consolidated Aircraft dropped from 39 1/4 to 19-7/8 on payment of its 100% stock dividend, but edged back up to close at 21-3/8, a gain of 1 1/2 over the low. Turnover was 45,100 shares in the two week period.

Trading on the Curb, as usual, followed the pattern of the Big Board. Turnover was 74,800 shares.

Turnover was 74,800 shares with price changes mostly confined to small fractions and no decisive trend evident.

Republic Aviation was the most active of the 20 stocks studied, gaining 3/4 on trading of 10,300 shares.

Republic recently announced two Air Corps orders totaling \$67,534,36 for planes and spare parts, lifting backlog to over \$130,000,000.

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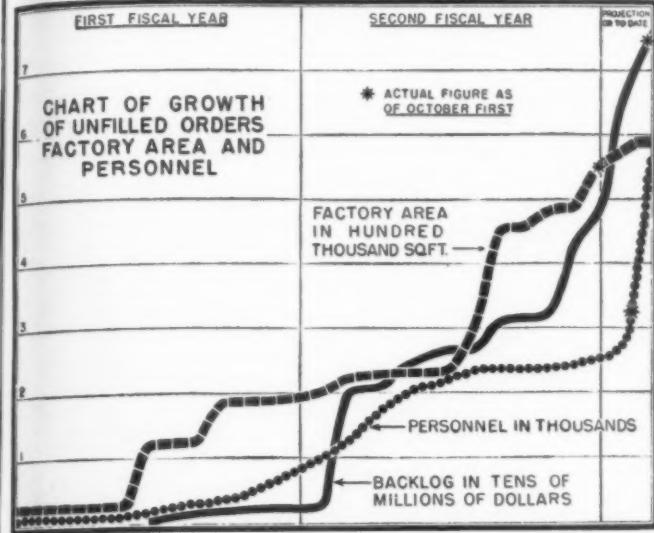
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Northrop Reports Loss for Fiscal Year But Capacity Rises Sharply

Although Northrop Aircraft, Inc., reports a net loss of \$848,778 for its fiscal year ended July 31, it seems more than likely that the company will be in the black when it again reports, in view of its statement that "present plant area and the increased working force raises the company's capacity to between \$25,000,000 and \$30,000,000 annually, which ties in with the company's

craft." Volume production on both models is expected during 1942.

The company has enlarged its Hawthorne, Cal., plant from 216,000 sq. ft. to 555,000 sq. ft. through advances of customers on contracts and without additional stock financing. After the close of the fiscal year, Northrop arranged a credit of \$3,500,000 with Chase National Bank and Manufacturers



commitments to deliver approximately \$60,000,000 in value of aircraft by July 31, 1943."

Northrop itself contrasts these figures with actual, net sales of \$3,327,379 in the last fiscal year. Also, it states with respect to the net loss figure that "no comparable figures are available, since the company's first fiscal year was characterized largely by preparation to enter manufacturing, while the second year was marked by the rapid expansion of the company to its present size. Capacity production will not be obtained until early next year."

As of Oct. 1 orders on hand totaled \$74,873,159 of which \$60,553,193 were from the Army and Navy and Great Britain and \$14,319,966 were represented by sub-contracts. This backlog compares with \$20,617,586 on Oct. 6, 1940. Company states principal contracts are for \$33,000,000 of "Vengeance" dive bombers, designed by Vultee Aircraft, Inc. An Air Corps order of \$26,000,000 was placed for the design and development of a highly specialized type of air-

craft Co. for the purpose of "any needed financing of the inventory of materials and work in progress prior to the delivery of completed aircraft."

As of Oct. 1 employees totaled about 3,100 and by the end of 1941 personnel is expected to be between 5,000 and 6,000.

Income for the fiscal year was \$3,407,704 (net sales, \$3,327,379, and reimbursement of expenditures and pro rata portion of fixed-fee under cost-plus-fixed-fee contract \$80,325). Deductions were \$3,983,212 (cost of goods sold was \$3,908,142 and reimbursed expenditures under cost-plus-fixed-fee contract were \$75,070). Selling expenses \$131,408; administrative and general expenses \$172,030. Other income \$30,168.

Balance sheet as of July 31: Assets \$6,948,095; current assets \$4,171,091, including \$901,511 cash; property, plant and equipment at cost \$2,129,995; deferred charges \$543,069. Current liabilities \$6,790,247; capital stock \$356,942 (\$1-par class A, \$282,305, and \$1-par class B, \$74,637); surplus \$200,610 (red).

Mid-Continent Amendment Explains Stock Purchases

Firm filed an amendment to its registration (140,000 shares of \$1-par common offered Oct. 16, 1940, at \$5 per share) stating that under an agreement dated July 25, 1941, Straus Securities Co., Chicago, agreed to and did loan Murdoch, Dearth & White, Inc., Des Moines, \$10,000 to enable the latter to exercise warrants to purchase 4,000 shares of common stock of the company deposited by Thomas Fortune Ryan, 3rd. president, with Commerce Trust

Co., Kansas City, under an agreement dated Sept. 16, 1940. (Prospectus of offering lists 8,200 shares of common under option to Murdoch, Dearth & White at \$2.50 a share.)

On July 26, 1941, Straus purchased through warrants 5,793 shares of stock as follows: (a) 4,000 shares purchased for the account of Murdoch, Dearth & White with the loan and held as collateral for the loan; (b) 100 shares purchased for the latter firm which paid the purchase price and received the shares; and (c) 1,693 shares purchased by Straus for its own account.

LEHMAN CORP. Buys 10,000 PAA Common

Lehman Corp., one of the largest investment trusts, in report for third quarter shows acquisition of 10,000 shares of Pan American Airways common. New aircraft items in the portfolio include 4,300 shares of Eastern Air Lines and 3,500 shares of U. S. Plywood.

The chief decreases in aircraft shares were 4,300 shares of American Airlines and 6,200 shares of United Aircraft. Also sold out were 6,000 shares of Bell Aircraft, 4,100 of Lockheed and 1,700 of Glenn L. Martin.

Aviation Corp. Gets 100% Voting Control of Republic Aircraft

Company purchased Sept. 8 all of the authorized and outstanding stock of Republic Aircraft Products Corp. and thereupon became the parent of that company, having 100% voting control.

On Sept. 23 the company's by-laws were amended to provide that board and committee members shall receive such compensation as the board prescribes and not necessarily for attendance at each regular or special meeting. The change also provides that the president shall submit to directors at each monthly meeting a report on the company's operations for each month preceding such meeting and an annual report for the preceding fiscal year to the stockholders at their annual meeting.

Ryan Reports Buying Westwood Aero School

Firm reports purchase of controlling interest Aug. 5 in Westwood School of Aeronautics, Inc., from Gordon D. Brown, former president.

School's name is changed to Ryan Aeronautical Institute and location is shifted to San Diego, effective Sept. 15. Ryan owns 26,748 of the 35,756 outstanding shares of stock of the school or 75% of voting power.

Bell Enters Agreement With Defense Plant Corp.

Company states it has entered into a contract with DPC, dated Aug. 25 and signed by company Sept. 11, under which the latter took over land and plant in Wheatfield, N. Y., originally acquired by company under an EPF contract. On Sept. 25, EPF contract was cancelled and a loan of \$1,105,000 from New York Trust Co., entered into as a result of EPF contract, was paid off.



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TWA Pays Promissory

Notes of 2 3/4% in Full

Company reports that on Sept. 18 it paid in full its 2 3/4% promissory notes, dated Mar. 8, 1941, and maturing Dec. 31, 1944, totaling \$250,000, leaving \$750,000 outstanding as of Sept. 30. All of the notes were issued under a bank credit agreement, dated Oct. 28, 1940, with Commercial National Bank & Trust Co. of N. Y., New York Trust Co., First National Bank of Kansas City, Commerce Trust Co., Kansas City, Harris Trust & Savings Bank, National Bank of Commerce and Farmers & Merchants National Bank of Los Angeles.

McDonnell Aircraft Files Statement of Salaries

Company states James S. McDonnell, president, was paid \$8,000 during past fiscal year and will receive \$10,000 during current fiscal year. Gardner W. Carr, executive vice president and director, employed July 1, 1941, will receive an estimated \$9,000 during the current fiscal year. Laurence A. Smith, treasurer, secretary, comptroller and director, employed Feb. 1, 1941, received \$2,840 during past fiscal year and will receive an estimated \$7,500 during the current fiscal year.

Statement Amended by Air Associates for Stock Offering

Firm amended registration statement to show underwriters and the amount of their participation in its proposed offering of 50,000 shares of 1.37% cumulative convertible preferred stock as follows:

White, Weld & Co., N. Y. C., 12,500 shares; Jackson & Curtis, Boston, 10,000; Merrill Lynch, Pierce, Fenner & Beane, N. Y. C., 10,000; Stern, Wampler & Co., Inc., Chicago, 5,000; E. H. Rollins & Sons, Inc., N. Y. C., 4,000; Pacific Co. of California, Los Angeles, 4,000; Mitchell, Tully & Co., San Francisco, 1,500; Cohu & Torrey, N. Y. C., 1,000; Fuller, Crutten & Co., Chicago, 1,000; Vietor, Common & Co., Buffalo, 1,000.

Company also filed an application for registration of 100,000 additional shares of its \$1-par common stock on the New York Curb Exchange.

In a post-effective amendment to its registration statement (49,000 shares of \$1-par common offered in May, 1937) company notes that options to purchase 24,000 shares expired Nov. 1, 1937. The underwriters, Robinson, Miller & Co., Inc., and Cohn Brothers purchased 25,000 shares at \$7 per share in May, 1937, but failed to exercise options covering 24,000 shares of the offering.

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● Briefly — Parks trained men are prepared for a future in commercial aviation — not merely qualified for their first job.

The training of every Parks graduate has included the acquirement of essential technical and mechanical skills, but in addition, Parks provides a comprehensive education in basic principles.

As a result, Parks trained men are equipped to take advantage of future opportunities; to win and accept responsibility. When you need men qualified for future leadership, write, wire, or phone Oliver L. Parks, President, for information on available Parks graduates.

PARKS AIR COLLEGE, Inc.
East St. Louis, Illinois

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GEAR

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WORLD OVER

EDO AIRCRAFT
CORPORATION
407 SECOND STREET,
COLLEGE POINT, N. Y.

MILITARY—SINGLE FLOAT GEAR

COMMERCIAL—TWIN FLOAT GEAR

Jacobs Reports Contract

Firm filed an amendment to its registration statement covering 140,000 shares of \$1-par capital stock stating it has received an advance copy of a contract with the War Dept. for the purchase of Pratt & Whitney type engines and spare parts, to be manufactured under license from United Aircraft Corp.

"While all the terms have not yet been finally agreed upon," the company states, "negotiations contemplate that such contract will be on a cost-plus-fixed-fee basis and that the total sales price will exceed \$30,000,000."

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Plan Approved for Merger of Vega Into Lockheed

The boards of directors of both Lockheed Aircraft Corp. and Vega Airplane Co. have approved a plan for the merger of Vega into Lockheed. One share of Lockheed stock will be issued for each three shares of Vega stock, with script issued in lieu of fractional certificates. Lockheed now owns 231,121 shares or 50.46% of Vega's 460,000 shares of stock and has subcontracted a large order to the latter for Ventura bombers for the British government. Lockheed has an authorized capital of 1,000,000 shares of stock, all of which are currently outstanding.

In order to preserve the Vega name and identity, it is expected that a new subsidiary, wholly-owned by Lockheed, will be organized to carry on the present business of the Vega company. The plan must be approved by a vote of not less than two-thirds of the holders of outstanding shares of both companies.

Backlog of the two companies now totals approximately \$550,000,000. Unfilled orders of Vega on Sept. 17 were \$262,964,767 and Lockheed had orders on file on the same date amounting to \$289,834,257.

From the standpoint of employment, the merged company would be the largest of any unit devoted exclusively to aircraft manufacture, with a payroll of 45,000 workers.

Combined floor space amounts to 3,129,045 sq. ft. with further additions now under construction. Floor space at Lockheed plants aggregates 1,817,107 sq. ft. and that of Vega, 1,311,938 sq. ft.

Republic Reports Gain in 2 1/2% Promissories

Firm reports increase of \$410,807 to \$4,756,792 in its 2 1/2% promissory notes held by First National Bank of Boston, Chase National Bank of N. Y. and Bank of Manhattan Co. Funds are being used to finance, under an EPF contract, the acquisition, construction and installation of additional plant facilities adjacent to present factory at Farmingdale, L. I.

Total is not to exceed \$6,336,497. Loan agreement is dated Feb. 14 and supplemented July 24. Funds were used as follows: land and land improvements, \$6,085; buildings, \$287,873; machinery, tools and equipment, \$146,487; and interest, \$9,525; leaving a \$39,164 decrease in working cash balance.

Chicago and Southern Shows 32,000 Shares of 7% Preferred

In annual report for year ended June 30, company shows 32,773 shares of 7% cumulative convertible \$10-par preferred stock outstanding and listed on the St. Louis Stock Exchange. Also, 82,270 shares of no-par common will be registered on notice of issuance. The common is reserved for conversion of the preferred on a 2 for 1 basis at present.

Carleton Putnam, president, director, as voting trustee, 130,900 shares of no-par common, equal to 78.28% of the common outstanding and to 65.29% of total stock outstanding at June 30.

Options at the close of the fiscal year stood as follows: 50,000 shares of common to be purchased within 10 years from Feb. 25, 1936, as follows: first three years at \$6 per share; second three years at \$7; and remaining four years at \$8. The options are held as follows: I. M. Simon & Co., St. Louis, 12,500 shares; Lawrence Stern & Co., Chicago, 6,250; Stern, Wampler & Co., Chicago, 6,250 shares; and Carleton Putnam, Mrs. D. D. Walker and Rogers Humphrey in the proportion of their respective holdings of common shares at time of the exercise of the option, 25,000. On Apr. 7, 1940, Putnam transferred and assigned to B. E. Braun, vice president, and A. Culbert, vice president, treasurer, one-sixth of his share of the option, provided that the amount each may purchase shall not exceed 3,000 shares.

Salaries for the year were as follows: Putnam, \$12,000; D. D. Walker, vice president, \$10,000; Braun, \$10,000; and Culbert, \$10,000.

Lockheed Reports 10 Millions in Loan

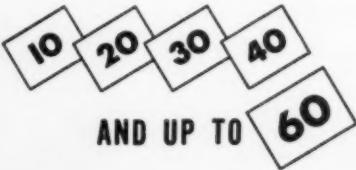
Company reports borrowing of \$10,000,000 from various banks as of May 2, under loan agreements dated April 21 as follows: Anglo California Bank, \$250,000; Bankers Trust Co., \$1,000,000; California Bank, \$250,000; Central City Bank & Trust Co., \$1,500,000; City National Bank of New York, \$1,500,000; First National Bank of Boston, \$500,000; Girard Trust Co., \$500,000; J. P. Morgan & Co., Inc., \$1,500,000; National City Bank of New York, \$1,500,000; New York Trust Co., \$500,000; and Union Trust Co. of Pittsburgh, \$1,000,000.

Loan agreements in each case are identical except for the amount borrowed.

"This line of credit was established, the company states, "for the purpose of assuring to registrant the maintenance of a bank balance believed to be commensurate with its present and future scale of operations. No portion of the funds borrowed has been called for use and it is not at this time possible to determine any specific use which the monies will be placed."

Boeing Liquidates Loan

Firm states it has paid off \$654,300 notes due July 1, 1946, and held by National City Bank of New York. The loan was entered into as the result of an EPF contract dated Oct. 14, 1940, for the firm to build and equip an aircraft manufacturing plant. On June 1, last, the DPF took over the facilities covered by the EPF contract and the loan was liquidated as of June 25.

SHEDDING  **POUNDS OF DEAD WEIGHT BY USE OF**



BOOTS SELF-LOCKING AIRCRAFT NUTS
"Outlast the Plane"

The revolutionary light-weight all metal, one piece, self-locking aircraft nut that is made from sheet metal...meets all Army and Navy Air specifications and is authorized for use wherever self-locking nuts are applicable.

Leading aircraft manufacturers are

now shedding weight with Boots Aircraft Nuts.

WRITE IN FOR VALUABLE TECHNICAL DATA.

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ness to subscribe to American Aviation

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AMERICAN AVIATION DAILY

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Washington, D. C.

Shipshape for Pursuit!

Swift and lethal as they look are the P-38 (Lockheed Lightning) pictured here and other U. S. Army pursuit ships. Similar American-built airplanes are now fighting with the R. A. F.

And, thanks to the in-line compactness of their Allison liquid-cooled engines, their designers had free rein to streamline them completely from tail to tip.

Thanks, too, to the cooperative efforts of our Army and aircraft industry, these highly advanced engines are now flowing out of the plant with ever-increasing production.



LIQUID-COOLED AIRCRAFT ENGINES

Allison

DIVISION OF GENERAL MOTORS



Maximum Performance...Minimum Bulk

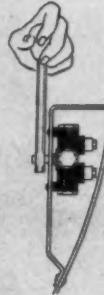
There are four important reasons why these radial-type hydraulic selector valves are being ordered and installed in ever-increasing quantities on Air Corps and Navy airplanes.

1. Bendix engineers have taken full advantage of the compactness inherent in radial design, giving these valves *maximum performance with minimum bulk and weight*. In addition, these valves are equipped with Bendix-developed plastic poppets weighing only one-sixth as much as comparable steel poppets.
2. Pressure drop is exceptionally low because the design achieves the shortest possible fluid path from inlet to outlet.
3. Operation is smooth and quiet at all flows and the valves have an unusually low handle torque.

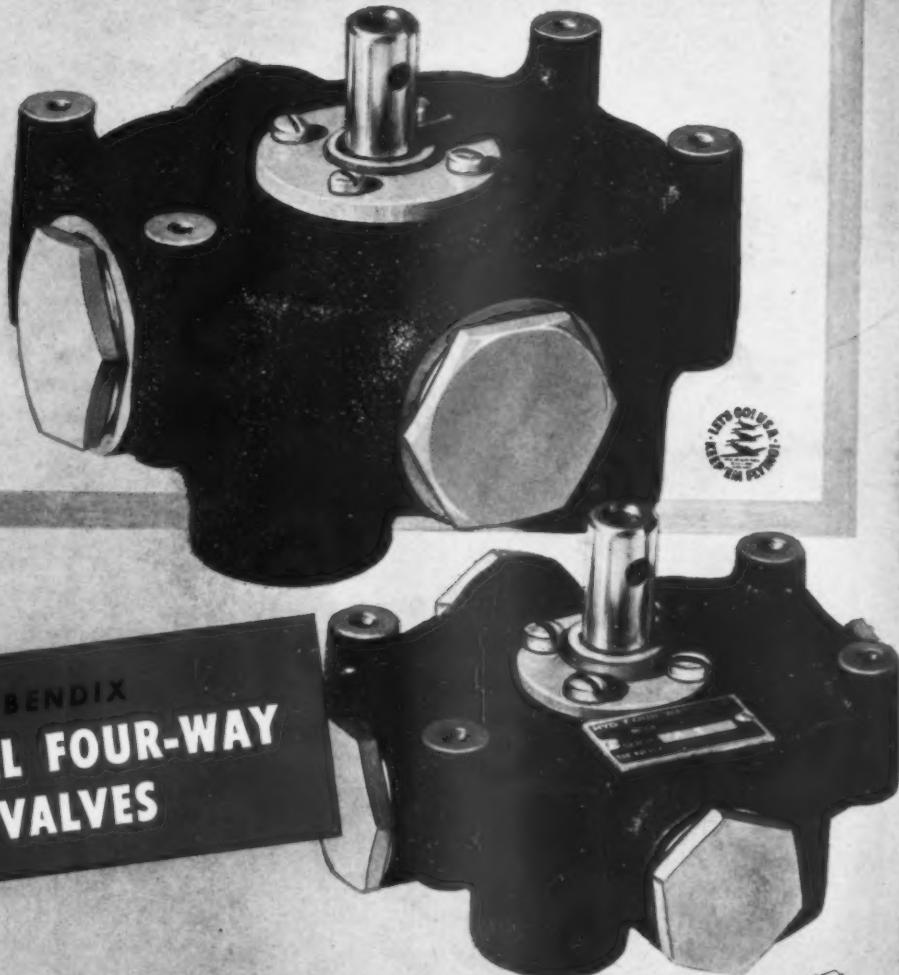
4. Simplicity of design and construction make the Bendix valve a true production item. They are being built in quantity under fast precision manufacturing schedules.

Illustrated are Models 2258-A1 (for $\frac{1}{2}$ " tubing) and 2257-A2 (for $\frac{3}{8}$ " tubing). Seven other models are available including dual and triple bank valves and others incorporating integral check and relief valves.

BENDIX 
Subsidiary of **AVIATION, LTD.**
Bendix Aviation Corporation
NORTH HOLLYWOOD, CALIFORNIA



This typical installation shows how the Bendix Four-Way Valve, because of its radial design, requires a minimum depth in fuselage cross-section



DISCONNECT COUPLINGS  POWER BRAKE VALVES  CHECK VALVES  PRESSURE REGULATORS 

HAND PUMPS  ACTUATING CYLINDERS  HYDRAULIC ELECTRIC SWITCHES  RESTRICTOR VALVES 

SEQUENCE VALVES  HYDRAULIC SELECTOR VALVES  TUBE CLAMPS  CUSTOM BUILT RADIO 

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